The Chemical Age

A Weekly Journal Devoted to Industrial and Engineering Chemistry

VOL. IX. No. 214 JULY 21, 1923 Prepaid Annual Subscription: United Kingdom, £1.1.0; Abroad, £1.6.0.

Contents

NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

The prepaid subscription to THE CHEMICAL AGE *is 21s. per annum for the United Kingdom, and 26s. abroad. Cheques, Money Orders and Postal Orders should be made payable to Benn Brothers, Ltd.*

Editorial and General Offices—8, *Bouverie St., London, E.C.4.*

Telegrams: "Allangas, Fleet, London." Telephone: City 9852 (6 lines).

Industry's Need of Chemists

MR. HUGO HIRST'S appeal, at the annual meeting of the General Electric Company, for a stricter application of science to industrial processes and his announcement that the company have committed themselves to the establishment of an important research laboratory recall the suggestion we have more than once offered that some organised effort should be made to educate the heads of our great industrial concerns respecting the proper use of science, and of chemistry in particular. In the present case the company are making this experiment, not because the duty and advantage of it have been impressed upon them by any of the bodies responsible for promoting chemical industry, but because they have arrived at the conclusion themselves. Here is one notable case to show that there are still great industrial enterprises in which chemists should be taking a vital part, and incidentally gaining a livelihood, and that among our many chemical organisations it is nobody's business to point out to directors and managers of such enterprises the necessity of an organised chemical service. In support of the easy-going theory, usually urged to defend inaction and lack of initiative, that industry has already absorbed all the chemists it wants, no substantial evidence has yet been offered. On the contrary, the decision here and there to try the experiment of establishing a works laboratory points in the opposite direction. The matter for lament is that our organisations have no definite policy or propaganda on the subject; they are content to preach to the converted and to convince the already convinced, while those who need conviction and conversion are left severely alone.

Those who heard what Sir Joseph Thomson said at the recent Brunner-Mond dinner on the liberal use of research made in competing countries, and the return derived from it, may have felt that here was an opening for excellent work for some society with imagination and energy. Instead of addressing chemists and firms who already employ chemists, Sir Joseph's plea might with far greater profit have been addressed to the multitude of firms who ought to be spending money on a chemical staff but who have never had the advantages of such a step pointed out to them. Instead of the scores of casual papers read to select handfuls of hearers, and destined to be soon forgotten, why should not the societies combine in organising conferences of employers in a few centres of the country, getting competent men like Sir Joseph Thomson to put the case for chemical research before them, and broadcasting the gospel as widely as possible?

It is necessary to emphasise the competency of the advocate, for one can imagine the case for a research service in industry put by some airy doctrinaire in a way that would wreck all its chances of acceptance by practical commercial people. Or, on the other hand, a too plausible and optimistic advocate might excite false hopes and produce disappointment all round. One hears occasionally of firms which engage a scientific expert and then get rid of him after a trial of a few months because the costing account shows that he has not "earned his keep." In other cases, again, the research man never gets a real chance because of the lack of equipment and the scant respect paid to his suggestions. These are generally the results of a false view at the outset of the functions of research, and might often be avoided if the employing firms were properly enlightened beforehand. The fundamental work of the chemist in industry is nowhere better applied than in the study of raw materials. Engineering and machinery firms have had their knowledge immensely improved by the work of their chemists, and, in addition to being able to produce better goods with far less liability to defect, gain themselves a much surer fundamental mastery of their own industry. The manufacture, again, of foods, whether fresh or preserved, is another vast field in which the chemist's services are now recognised as indispensable. Our feeling is that if the various in-

dustries were really educated as to the advantages of chemical research the field for the employment of chemists would be very greatly enlarged, with equal advantage to the profession and to industry. The pity of it is that we have no body or bodies to set the educational forces effectively in motion.

The Important Rôle of Hydrogen

THE name of Dr. Hugh S. Taylor, of Princeton University, U.S.A., will be familiar to our readers, if only for the reason that he has at times contributed to our columns, and he was, moreover, well known in this country when, during the war, he was associated with the Munitions Inventions Department, primarily in connection with the study of industrial hydrogen. Dr. Taylor has recently accorded one of our American contemporaries an interview, in which he discussed the significance of industrial hydrogen, and it is the publication of this interview which reminds us of the fact that since the war ended we seem over here to have rather neglected the hydrogen problem, and the subject does not seem to have continued to attract the attention which it deserves from industrial research workers. We are, perhaps, inclined too glibly to regard hydrogen as a war product, as primarily a substance of utility in the dirigible airship, and to overlook the two other great fields wherein it plays so important a part—namely, in the production of synthetic ammonia and in the oils and fats industries. So far as hydrogen is concerned it has not yet in this country come into its own in either of these two industries. Although in the way of nitrogen fixation we may soon see the materialisation of an ambitious programme, our present output is still only on a scale of about one ton per day, while in the past year or two conditions in the fat-hardening industry have not been of a nature to call for extensions. For all that, hydrogen is bound in the near future to rank as one of the most important of our industrial gases, and it is, of course, well known that Claude is endeavouring to find a cheap source of supply in the gases from the coke-ovens at Bethune. The significance of Claude's work in this direction will be appreciated when it is recalled that in the Badische process the cost of producing the necessary hydrogen is said to amount to nearly 70 per cent. of the cost of the ammonia yielded.

At the present time there does not seem to be any conclusive practical evidence as to which process for the manufacture of hydrogen is commercially the most satisfactory. We have, of course, the four standard methods—namely, electrolytic decomposition of water, the steam-iron contact process, the water-gas liquefaction process, and the water-gas catalytic method. The last is a more recent development with which Dr. Taylor's name has been closely associated. At a works in London during the war he undoubtedly showed that not only could carbon-monoxide be readily oxidised catalytically to carbon-dioxide, but the process promised to provide hydrogen at a minimum cost. The one disappointing feature of dealing with water-gas in this way is that a remnant of some 4 per cent. of nitrogen persists in the final gas, and this cannot be economically removed in the present state of knowledge. The ammonia manufacturer would, of course, probably welcome this nitrogen, but in the hydrogenation of oils it enters into account as a troublesome diluent. In addition to the methods for producing hydrogen which have been mentioned above, one has now to reckon with the process which depends upon the thermal decomposition of hydrocarbons; and, assuming that it is eventually possible to eliminate all traces of such compounds as methane, we may eventually find that herein is a solution of the cheap hydrogen problem.

Professor Smithells' Appointment

THE announcement that the Court of the Salters' Company has appointed Professor Arthur Smithells, F.R.S., of Leeds, to be Director of the Salters' Institute of Industrial Chemistry, from October 1 next, will be received with real satisfaction. Since Dr. Michael Forster left to undertake work in India—depriving chemical science at home of a man of exceptional qualities—the directorship has remained vacant, and the Salters' Company may be congratulated on a choice which preserves the personal distinction associated with the directorship of the Institute and enables Professor Smithells still to employ his gifts as a teacher and organiser.

Professor Smithells, whose term of office at Leeds University closes at the end of September, is already resident in London, and his decision to retire from Leeds had already been taken before any proposal to undertake the directorship of the Institute had been made. It is, however, a happy arrangement from every point of view. The research work of which he will be in charge, involving the direction of the studies of young research workers, is of the kind he was hoping to pursue, and lies in the path of his lifelong interest and experience. The fact that it is a part-time appointment will leave him free to pursue the plans of work he had in view when he decided to leave Leeds for London. He is understood to be particularly attracted by the fact that the Salters' Institute represents a voluntary effort of manageable proportions unhampered by any restrictions of a Governmental or bureauratic kind. It can pursue its enterprise in freedom and vary it in the light of experience. It will, Professor Smithells hopes, enable him both to retain his associations with the chief centres of chemical education and to extend his acquaintance with the leaders and the conditions of chemical industry.

Chemical Manufacturers

AMONG the most interesting points raised at the annual meeting of the Association of British Chemical Manufacturers are two of which comparatively little has been heard. The first was the use of alcohol as a raw material for chemical manufacture. From Mr. Carr's statement it appears that for some time past negotiations have been proceeding with the Excise authorities respecting a relaxation of restrictions where alcohol is required for chemical purposes. It is clear that the concessions are regarded with great satisfaction, and the case illustrates the advantage of being able to treat with Government departments through representative agencies. On the transport problem the Association's attitude is notable for its strong dis-

position to rely on friendly negotiation with the railway companies in preference to the more combatant attitude recommended by the Federation of British Industries and other bodies.

Apart from these questions there were many points worth noting in the course of discussion. Sir Max Muspratt referred in plain terms to the grave results of the Ruhr situation, and his warning goes to show the steady growth of commercial opinion in favour of some settlement which will liberate trade from its present fetters. Equally significant was the open alliance—for it was hardly less than that—which was proclaimed between the chemical manufacturers and the dyestuff industry, and the pledges of support and confidence offered to Sir William Alexander. Dr. E. F. Armstrong pleaded once again for the recognition of research as one of the guarantees of the future of chemical industry. And, finally, there was Dr. Levinstein's encouraging account of the Association's plans for the chemical section at the British Empire Exhibition of next year. The arrangements are apparently being made on an impressive scale, and the spirit in which the work is being taken up promises well for a really large success. The past year has obviously been one of steady consolidation and expansion, and the work has been of the solid and practical kind that requires but little trumpeting.

June Trade Returns

A NUMBER of conflicting statements have recently been made in connection with the official trade returns, and, indeed, the general trade of the country has been undergoing several fluctuations. May was hailed as a satisfactory month by those basing their conclusions on the official figures, although there was a general impression that trade was slack, which has been borne out in the June returns. In the chemical trade, too, there is a rather conflicting state of affairs. On the one hand one learns of very quiet business, or no demand, and, on the other, that British chemicals are being more widely used, and establishing themselves as second to none throughout the world. Probably it is a question of point of view, and considered in that way the position is twofold. The general chemical trade, both in imports and exports, is rather poor at the moment compared with what it might be, but the British manufacturer is in a very fair position considering the unsettled state of many foreign markets. Consequently, although the export trade shows a decided improvement over last year's figures—£2,385,000 for June, 1923, as against £1,785,000 for June, 1922—in the import trade the improvement is very slight, amounting to an increase in the value of the imports of £55,000 only. A number of chemical products show very satisfactory increases in exports compared with last year, particularly ammonium sulphate and coal tar products, benzol, toluol, naphtha, naphthalene, tar oil, and creosote all showing marked increases. Synthetic dyestuffs were exported in more than double the quantity for June, 1922, but the value of these exports increased only from £61,000 to £82,000. indicating a lowering of the average price of dyes. The import statistics show little change, except that calcium carbide has been imported to the extent of 28,000 cwt. instead of 17,000 cwt. in June, 1922, and that there has been a big decrease in the importation of crude glycerin.

The Ramsay Fellowships

IN connection with the awards just announced by the Ramsay Memorial Fellowship Trust, it may be of interest to state that since the institution of the Trust in 1919 Fellowships have been held by twenty-one Fellows. Apart from the British, the Canadian, and the Special Glasgow Fellowships, the Ramsay Fellowships have been held by American, Danish, Dutch, Greek, Italian, Japanese, Norwegian, Swedish and Swiss students. Information has recently been collected as to some of the posts held by former Ramsay Fellows. One British Fellow, Dr. A. E. Mitchell, has been appointed assistant lecturer in chemistry at University College, London. The Greek Fellow, Dr. B. C. Papaconstantinou, worked under the Greek Minister of War in Asia Minor, testing the explosives for the Greek Army, and is now lecturer in physical chemistry at the University of Athens. The Swedish Fellow, Dr. Lennart Smith, has been appointed Professor of Chemistry at Lund. The Swiss Fellow, Dr. Charles Naegeli, is assistant lecturer in the chemical laboratory in the University of Zurich. Another Swiss Fellow, M. Etienne Roux, has been granted the degree of Doctor of Philosophy of the University of Oxford, and has been appointed research chemist in the French firm "Matières Colorantes et Produits Chimiques de St. Denis" in Paris. The Italian Fellow, Dr. Remo de Farhi, has been appointed Professor of General and Applied Chemistry in the R. Scuola Superiore di Architetture di Roma, lecturer in General Chemistry in the University of Rome, and assistant in Applied Chemistry in the R. Scuola di Applicazione per gli Ingegneri di Roma.

Points from Our News Pages

The problem of the Treatment of Effluent Spent Liquors i Ammonia Works is dealt with in an authoritative artic by the Chief Inspector of Alkali Works (p. 58).

A full report is published of the annual general meeting of the Association of British Chemical Manufacturers (p. 61).

Some specially contributed impressions are given of the Cambridge Week of the Society of Chemical Industry (p. 63).

At the annual meeting of the British Cyanides Co. on Wednesday it was stated that a new process for fixing atmospheric nitrogen was now in the practical stage (p. 66).

Export inquiry is reported to be somewhat better in our London Market Report, though not much actual business is passing (p. 71).

Owing to the Glasgow holiday there has been little business in the Scottish Chemical Market (p. 74).

The Calendar

Sept. 10-13	Institute of Metals: Annual Meeting.	Manchester.
12-19	British Association for the Advancement of Science: Ninety-first Annual Meeting.	Liverpool.

Treatment of Effluent Spent Liquors

The Problem in Ammonia Works

The following notes on the Treatment of Effluent Spent Liquors from the Distillation of Ammoniacal Liquors are taken from the Annual Reports just published of the Chief Inspector of Alkali Works

THE difficulty of disposing of effluent spent liquors from the ammonia distillation process as carried on at gas works and coke oven works was fully discussed in last year's report of Government Inspectors for Alkali Works. Further work has been done on the subject during the past year, but the research is still in progress, owing to the delay in erection of plant at works where novel features have been introduced that were lacking in the experimental scrubbers erected at the Hornsey Gas Works and described in last year's report, pp. 19, 20. Since their erection in February, 1921, the decolorising and dephenolating scrubbers at Hornsey have successfully dealt with the whole of the effluent liquors produced in the manufacture of 2½ to 3 tons of sulphate of ammonia per 24 hours, and further improvement has now been effected in the character of the final effluent discharged—analysis indicating a volatilisation of 71 per cent. of the phenols with a reduction in the figure for "Oxygen Absorbed" of 42 per cent. Undoubtedly, however, the percentage purification effected cannot be regarded as fully coming up to expectations in view of the results obtained in the laboratory with apparatus of similar design. The improvement in the character of the liquor, *quâ* reduction in the figure for oxygen absorbed, effected by blowing with boiler fire gases, appears to be due in great part, if not entirely, to the volatilisation of the phenols; thiocyanate and thiosulphate must be regarded as stable under scrubber conditions, and any reduction in the figures shown by analysis is attributed to sampling and to errors inherent in the estimation of these constituents in complex mixtures. All attempts hitherto made to effect the removal of these bodies by chemical action have failed, as the value of the recovered products is negligible. Attempts to deal with the effluent liquor from the ammonia distillation plant by bacterial action on specially prepared filter beds have met with a greater measure of success and encourage the belief that, could the beds be fed with an effluent from which the bulk of the "phenols" had been removed by preliminary treatment in a scrubber of approved design, the final effluent discharged from the filters would be relatively innocuous in respect of phenol, thiocyanate and other oxidisable constituents.

The matter was fully discussed in all its aspects with the manager of one of the gas works in the London area where the local authorities have raised objections to the character of the effluent liquors hitherto run into the sewers, and arrangements are now being made at the Hornsey Gas Works to submit a portion of the effluent from the ammonia distillation plant to double treatment on the lines indicated above, whereby the effluent liquor from the dephenolating scrubbers will be discharged on to a filter bed charged with specially activated material for treatment by bacterial action prior to discharge from the works. Facilities are promised for sampling the treated liquor at various stages in the process, and the results of the analyses should afford data of value for those who may be faced with similar problems.

Volume and Character of Effluents

A preliminary discussion of this subject will be found in the annual report of the Alkali Inspector for 1921 (pp. 10 to 13) where it is shown that the amount of thiocyanate in the liquor is in large measure controlled by the oxidising influences to which it has been exposed prior to distillation. It is not the practice at gas works or coke oven works to measure the volume of effluent liquor discharged from the plant, but the volume of any given effluent may be taken as related, within certain limits, to that of the ammoniacal liquor distilled, and can be calculated with some approximation to accuracy if the ammoniacal content of the feed liquor be known, due allowance being made for increase of volume due to addition of lime water and admission of steam at the still. Further correction would be necessary for water introduced with acid into the saturator and evaporated therefrom, and for "devil" liquor condensed. Water vapour will also be present in the foul gases leaving the condensing system; but, with this at air temperature, the amount will be negligible. It has been usual to assume that the final effluent is related to the ammoniacal feed liquor as 150 : 100. The subject finds illustration in the valuable paper on the "Design and Working of Ammoniacal Liquor Stills," read by Mr. Percy Parrish before the Chemical Engineering Group of the Society of Chemical Industry at the annual meeting of the Society at Glasgow in July, 1922. Mr. Parrish found in his experimental plant that 1,277 lb. of effluent liquor were discharged for 836 lb. of ammoniacal feed liquor entering the still, which corresponds to a volume ratio of approximately 153 : 100. Proceeding on the assumption that the volume of feed liquor increases by 50 per cent. prior to discharge, it is of interest to calculate from data supplied the volume of effluent spent liquor for various strengths of feed liquor. Results are stated per ton of sulphate (25 per cent. NH_3) to correspond with average working conditions observed in practice, and are shown in the following table :—

VOLUME OF EFFLUENT SPENT LIQUOR IN RELATION TO VOLUME OF FEED LIQUOR.

Strength of Gas Liquor.		Gallons of Liquor per ton of Ammonium Sulphate, based on 100 per cent. conversion. NH_3 content of S/A—25%.	
Oz. Strength.	Per cent. NH_3.	Gas Liquor Used.	Total Effluent Spent Liquor calculated for 50% increase on G/L.
4	0·868	6,470	9,710
5	1·085	5,170	7,760
6	1·302	4,320	6,480
7	1·519	3,690	5,540
8	1·730	3,230	4,850
9	1·953	2,870	4,310
10	2·170	2,580	3,870
11	2·389	2,340	3,510
12	2·604	2,150	3,230

These figures are consistent with those given by Dr. Maclean Wilson for average coke oven practice (*see* Annual Report, 1921, p. 10) :—20,000 gallons of effluent spent liquor are stated to be discharged from works carbonising 200 tons of dry coal per day, corresponding to about 9,000 gallons per ton of S/A made.

Of this,

	Average.	Per 100 Vols. of Total Effluent.
Water of combustion accounts for..	9	
Moisture in the coal ,,	23	=65 (Liquor distilled).
Water used on the scrubbers accounts for	33	
Water condensed from steam used	17	
Lime Water feed	18	=35 (Added in Still).
	100	

Whence,

Vol. of Final Effluent : Vol. of Feed : : 100 : 65(=154 : 100).

Examination of the Spent Liquor

A correct knowledge of the volume of spent liquor produced is obviously of prime importance in any case where treatment of the effluent by blowing with fire gases is under consideration. Measurement of the feed and effluent liquors would undoubtedly be the most satisfactory way to obtain the necessary data; the collection and measurement of a large volume of boiling liquor highly charged with suspended matter, however, would require the provision of plant not always available, and the use of an alternative and simpler method is to be desired. Mention was made in last year's report, p. 19, of a method of calculation based on an analysis of the inlet and exit liquors concerned, taking the amount of chloride entering and leaving the system as a constant to which volumes are related by simple arithmetical calculation.

Unfortunately the amount of chloride present in many liquors is small, and its estimation in complex mixtures, highly charged with organic matter, is an operation by no means easy to effect. It was thought desirable, however, to apply the method in a concrete case, and with this end in view arrangements were made at one of the larger coke oven works to submit the procedure to rigorous test under controlled conditions.

The plant employed for the experiments included a Holmes rectangular still with heater and bottom discharge saturator erected in 1911; the foul gases, after cooling to air temperature, are burnt in the oven flues. Three tests were made. In the first two experiments the spent and "devil" liquors were mixed in a large tank and the effluent sampled on its way to the spoil tip; in the third experiment the effluent from the still and the "devil" liquor were kept separate and the amount of "devil" liquor was measured. The ammonical feed liquor in all three experiments was measured in a large boiler and the lime feed in a drum.

Three Tests Carried Out

In test No. 1 equal volumes of feed and effluent liquor were collected every 15 minutes to obtain the necessary bulk samples over the whole period of testing, but the precautions necessary to guard against oxidation of the feed liquor were omitted, and the results of the analysis in this case afford no data for a comparison of the weights of thiocyanate and thiosulphate entering and leaving the system. In the second test the sampling was properly carried out, but the boiler in which the effluent liquors were mixed contained lime deposited from previous operations, and there is reason to believe that lime passed into solution and caused the fixed alkalinity figure of the final effluent to exceed its proper value. In test No. 3 conditions *quâ* sampling and the collection and measurement of liquors is considered trustworthy. The chloride figures in all three tests should be free from error, but, as already stated, volume data based on such analyses are necessarily given with reserve.

The results of the various tests are shown in Table I. In

RELATION OF FEED LIQUOR TO EFFLUENT LIQUOR IN AMMONIA DISTILLATION PLANT AT A COKE OVEN WORKS.

TABLE I.

	Test 1.—May, 1922.				Test 2.—July, 1922.				Test 3.—October, 1922.			
	Per 100 Parts of Liquor.		Lbs.		Per 100 Parts of Liquor.		Lbs.		Per 100 Parts of Liquor.		Lbs.	
Duration of Test	2 Hrs.				3 Hrs.				3½ Hrs.			
Ammonia Liquor Distilled—	3,370 Gallons				3,915 Gallons				4,518 Gallons			
Cyanide, calculated as HCy	0·007		2·3		0·033		12·7		0·012		5·4	
Sulphide, „ „ H_2S	—		—		0·288		112·8		0·280		126·5	
Thiosulphate „ „ Sulphur. (Iodine Test).	0·078		26·3		0·035		13·7		0·067		30·3	
Thiocyanate „ „ CNS	0·0915		30·8		0·037		14·5		0·059		26·6	
Phenol „ „ C_6H_5OH	—		—		0·176		69·0		0·150		67·8	
Ammonia :—	as NH_3	as S/a	as NH_3	as S/a	as NH_3	as S/a	as NH_3	as S/a	as NH_3	as S/a	as NH_3	as S/a
Free	0·825	3·20	278·0	1078·7	0·757	2·94	296·4	1150·0	0·815	3·17	368·2	1432·1
Fixed	0·170	0·66	57·3	222·3	0·091	0·35	35·7	138·5	0·105	0·64	74·5	289·2
Total	0·995	3·86	335·3	1301·1	0·848	3·29	332·1	1288·5	0·920	3·81	442·7	1721·3
Chloride, calculated as HCl	0·282		95·03		0·1535		60·100		0·233		105·27	
Lime Water used Gallons	140				190				364			
Chloride, calculated as HCl	0·0087		0·12		0·0087		0·165		0·0085		0·31	
Total chloride entering			95·15				60·265				105·58	
Effluent Spent Liquor (*Includes* D/liquor) :—	4,490 Gallons				4,415 Gallons				6,053 Gallons			
Cyanide, calculated as HCy	Nil		Nil		—		—		0·0012		0·75	
Sulphide „ „ H_2S	Nil		Nil		Nil		Nil		Trace		—	
Thiosulphate „ „ Sulphur. (Iodine Test).	0·031		13·9		0·030		13·2		0·032		19·5	
Thiocyanate „ „ CNS	0·0485		21·8		0·0363		16·0		0·034		20·5	
Phenol „ „ C_6H_5OH	—		—		0·139		61·5		0·1095		66·3	
	as NH_3	as S/a	as NH_3	as S/a	as NH_3	as S/a	as NH_3	as S/a	as NH_3	as S/a	as NH_3	as S/a
Ammonia .....Total	0·050	0·194	22·45	87·1	0·033	0·128	14·5	56·5	0·027	0·105	16·3	63·5
Fixed alkalinity, calculated as CaO	0·010		4·5		0·145		64·0		0·600		36·5	
Chloride, calculated as HCl	0·212		95·15		0·1365		60·265		0·1745		105·58	
	Results Calculated.				Results Calculated.				Results Calculated.			
	For 2 Hrs. Test.		Per Ton S/a Made		For 3 Hrs. Test.		Per Ton S/a Made		For 3½ Hrs. Test.		Per Ton S/a Made	
Volume of Total Effluent :—Gallons												
Inlet Liquor fed to Still	3,370		6,230		3,915		7,120		4,518		6,120	
Lime Water added	140		260		190		345		364		495	
Entering Saturator with Acid	26		50		27		50		37		50	
Steam used (by difference)	954		1,760		283		515		1,134		1,535	
	4,490		8,300		4,415		8,030		6,053		8,200	
Volume of Effluent (Inlet Feed= 100)		133				113				134		
Steam used—Per cent. of Inlet Feed Liquor		28				7				25		
Ammonia.—Loss in Effluent, per cent. of total entering		6·7				4·4				3·7		

In this Table no correction is applied to the figures for steam used due to water entering with the acid and evaporated from the saturator, nor for moisture in the foul gases leaving the condenser. The net effect would be to diminish the figure for water equivalent to steam used by about 50 galls. per ton of S/A made.

test No. 2 general confirmation of the correctness of the volume data is afforded by the calculated weights of thiocyanate and thiosulphate entering and leaving the system, and in test No. 3 by the figures for phenol; but the volume relationship 113 (total effluent): 100 (feed liquor) for test No. 2 is admittedly anomalous, and in tests Nos. 1 and 3, the relationship 133 (or 134): 100 is somewhat lower than the figure one was led to expect. Judgment is suspended, therefore, in the absence of further data obtained at a works where the volume data calculated from the analysis figures could be checked by actual measurement of the spent liquor leaving the system.

RELATION OF FEED LIQUOR TO EFFLUENT LIQUOR IN AMMONIA DISTILLATION PLANT.

TABLE II.

—	Test 3.—Oct., 1922. Per Ton of S/A (25·75 per cent. NH_3) made				
	Feed Liquor entering Still	Lime Water used	Effluent Liquor leaving Still (settled)	"Devil" Liquor condensed	Final Effluent after mixing calculated (settled)
Volume ..... Galls.	6,120	495	7,190	1,010	8,200
Composition—Weight in lb.					
Cyanide, calculated as HCy.....	7·3	—	Nil	1·0	1·0
Sulphide, calculated as H_2S.....	171·5	—	Nil	Trace	—
Thiosulphate (Iodine Test), calculated as Sulphur	41·2	—	26·5	—	26·5
Thiocyanate, calculated as CNS.....	36·0	—	27·8	—	27·8
Phenol C_6H_5OH	92·0	—	66·4	23·3	89·7
Ammonia (in terms of S/A)—					
Free	1,936	}	67·0	19·0	86·0
Fixed.....	390				
Total	2,326		67·0	19·0	86·0
Chloride, calculated as HCl.....	142·5	0·5	143·0	Nil	143·0

	Results Calculated.			
	Per ton of S/A made. Gallons.		Per cent. of Total Volume.	
Volume of Total Effluent:—				
Inlet Liquor fed to still.....		6,120		74·7
Lime Water added		495		6·0
Entering Saturator with Acid .		50		0·6
Steam used				
Condensed in Still	575		7·0	
Condensed as "devil" liquor	960		11·7	
		1,535		18·7
		8,200		100·0

Lime Feed to Still

Speaking generally, the lime feed to an ammonia still should be related strictly to the fixed ammonia content of the liquor distilled, a due excess of lime being provided to ensure the liberation of the whole of the fixed ammonia prior to discharge of the spent liquor from the still. At the best works periodic analyses are made of the liquor distilled and of the lime used and due adjustment effected to ensure an excess of 10 to 20 per cent. At many works, however, such analyses occupy no place in routine testing. In general an undue excess of lime is used, which must of necessity adversely affect the production costs and lead to increased labour charges for the cleaning of stills and removal of sludge from spent liquor settling tanks (Works B below). On the other hand, deficiency of lime—as already indicated in Report 1918, p. 27—is often the cause of very serious loss of ammonia (Works D below). The divergency of practice from theory in this respect finds illustration in the following statement, the data for compiling which have been kindly supplied for publication by the management of three typical works, in all of which the process is under the care of a skilled chemist.

LIME FEED IN RELATION TO FIXED AMMONIA.

Gas Works Liquor	Works A.	Works B.	Works C.	Works D.	
	Lime Feed			Soda Ash Feed	Equivalent Lime Feed
Period	6 months	6 months	One week	Two weeks	
Ammoniacal Liquor Distilled:—					
Volume..... *Galls.*	24,189,000	2,736,000	42,770	29,660	
Fixed Ammonia:—					
Per cent. of Total Ammonia	23·5	21·0	16·3	23·3	
Total weight tons	441	34	16·2 (cwts.)	23·6 (cwts.)	
				As Na_2CO_3	As CaO
Lime, as CaO—					
Equiv. to Fixed NH_3 Tons	726	56	26·7 cwts.	73·5 cwts.	38·8 cwts.
Actually used, Tons	804	162	28·0 ,,	93·0 ,,	49·1 ,,
Excess used, Tons..	78	10·6	1·3 ,,	19·5 ,,	10·3 ,,
Excess used, Per cent.	10·7	190	4·8	26·5	26·5
Used, per 1,000 galls. of liquor distilled, Cwts.	0·67	1·18	0·65	3·15	1·65
Ammonia in Effluent Liquor, per cent. ..	0·02	0·05	0·02	Average 0·08 (max., 0·387; min. 0·014).	

NOTE.—The results for Works A and B correspond to ordinary working practice; those for Works C and D to special experimental periods, during which the lime (or soda ash) feed would be under closer supervision.

A Clause in a Chemical Contract

New York Company's Appeal Dismissed

IN the Court of Appeal on Thursday, July 5, Lords Justices Bankes, Aitken and Younger, dismissed an appeal from a decision of Mr. Justice Greer on a special case stated by an arbitrator. The case raised a question as to the effect of a condition in a written contract where both parties at the time of the making of the contract knew that the condition could not be complied with.

By two contracts, dated October 28 and 31, 1921, the sellers in London, E., Ofverberg and Co., sold to the buyers in New York, G. F. Taylor and Co., five and ten tons respectively of sodium cyanide, f.o.b. Havre, net cash against documents in London, by confirmed irrevocable credit, and subject to the conditions appearing in the contracts. Condition 5 of the contracts was in the following words:—"Any claims in relation to weight, quality, or otherwise must be made in writing and delivered to the sellers within ten days of the date of delivery to the purchaser of the delivery order or other documents of title. Claims after such period will not be recognised."

On November 25, 1921, the sellers invoiced to the buyers 190 cases of sodium cyanide in execution of the contracts, and on the same day they put the goods on board a steamer, the *Rousillon*. The documents relating to this shipment were handed to the buyers against cash in London on December 2 1921.

The arbitrator found as a fact that it was known to both parties when the contracts were made that it would be impossible for the buyers to make any inspection of the goods within ten days of delivery of the documents of title. The *Rousillon* arrived at New York on December 7, 1921, and the buyers took possession of the goods a few days later.

The first complaint made by the buyers to the sellers about the goods was on January 19, 1922, when they telegraphed that they had "received two claims; inferior quality; now investigating; will report further"; and, later in January, the buyers made a definite claim in writing alleging defects of quality. The goods were defective.

The question was whether the buyers' claim was barred by condition 5 of the contract.

Mr Justice Greer decided in favour of the sellers. He said that condition 5 was part of the contract, and even if it meant delivery of documents to the buyers' bankers in London, and not to the buyers themselves in New York, the buyers were out of time in making their claim unless they could get the contract rectified. As matters stood, he held that the buyers' claim was barred by condition 5 of the contract.

The buyers appealed, and their appeal, as stated, was dismissed.

Association of British Chemical Manufacturers

Retrospect of the Year's Work

THE seventh annual general meeting of the Association of British Chemical Manufacturers was held in the Chemical Society's Rooms, London, on Thursday, July 12. Sir Max Muspratt (Chairman of the Association) presided.

The Chairman's Address

In moving the adoption of the report and accounts the Chairman referred to the pride of the members in the Association, and said that as chemical manufacturers they had a duty to perform in instructing ministers of the Crown and other members of the Government and the Civil Service as to what they ought to know about chemical industry. They had also to impress upon the nation that the chemical industry was a great national asset. Although in past years they had taken a prominent part in the British Industries Fair they were not taking any part next year in order to concentrate on the British Empire Exhibition. They had taken and sublet 30,000 square feet of space, and they intended the chemical section to be a complete survey of Great Britain's services to chemistry, from top to bottom, from the smallest chemical manufacturer to the most brilliant and epoch-making discovery by scientific men in chemistry. It would be one of the most complete exhibitions of chemistry in its broadest sense that had ever been brought before the great public of the British Empire before.

The Ruhr Problem

Referring to the Continental situation, the Chairman continued: The whole position of the Ruhr is one which the chemical industry, especially the fine chemical and the dyestuff branches of the industry, has to look upon with great apprehension. There are superficial advantages in having competitors closed, but nobody with the broad training of a chemist will for a moment take that aspect; it is bigger and larger than that. (Hear, hear.) On the purely material side, it is even better to have the chemicals in the hands of a competitive manufacturer than to have them in the hands of an irresponsible Government Department, and when that irresponsible Government Department is not even in this country I need hardly say that what is going to happen to those dyes and other chemicals which have been taken by the French Goverment is causing grave doubt and uneasiness in the minds of everyone connected with the Council of the Association. We have taken every step that we think humanly possible; we have kept all the necessary Government Departments in this country well advised. We have taken opportunities for informal communications with sympathetic or possibly sympathetic people in France itself, and for the moment we have very reassuring messages. But the matter is one that is still a great menace to the younger brethren of the chemical industry, and we will continue to do everything we can, and hope that everything will come right. I should like to repeat here the very timely warning which Mr. Woolcock gave to the dyers and colourists, that what had happened in the Ruhr was a reminder to the dye-users of the very unstable foundation upon which their supplies of dyes still rested, and that the Government of this country was free at any rate from one grave anxiety by the fact that the great textile industry could go on with the assistance of the British dye manufacturers, whatever happened on the Ruhr. That is a lesson which I think everyone of us has got to drive home to the general public, whatever happens in the next few months or the next few years. (Cheers.)

Dyestuffs

I will not elaborate, the Chairman said, the paragraph in which the Dyestuffs Act is dealt with, except to refer to the agitation for the repeal of that Act and to ask if the real trouble of the textile industry is not the high price of cotton and the great difficulties of marketing it in the Far East. If that is the real economic difficulty, and I believe it is, they should also realise the difficulties of the colour industry and give that industry every assistance in trying to overcone its difficulties which are due to an entirely different cause. I am confident that last year great advances were made not only on the technical and business side, but towards a better understanding of the economic position. It is our firm intention to have a strong and successful dye industry in this country which will be capable of supporting itself in a very short time against competition from any part of the world. (Hear, hear.) That is what we desire to carry out, and I believe it is being steadily achieved. What is wanted is patience, co-operation, and goodwill. On the subject of co-operation, which Sir William Alexander spoke so eloquently about a few days ago, I know I am speaking for everyone occupied with the heavy chemical industry in assuring him and his colleagues in other branches of the dye industry that the heavy chemical industry does desire to assist and co-operate with them in every possible way. Co-operation has proceeded appreciably, but, if I may just drop a gentle hint, I believe that co-operation can be speeded up to the advantage of the heavy chemical industry and to the very great advantage of the dye industry.

Alcohol and Transport

Turning to the question of alcohol, the Chairman expressed the Association's indebtedness to Mr. Carr for the way in which he had handled this problem in conjunction with the Committee. The Custom House officials had the duty of protecting the revenue; they must not forget that. After long negotiations further concessions had been made which Mr. Carr and the Committee were convinced were as far as any manufacturers could reasonably ask the Customs officials at present to go.

The question of transport could have been expanded indefinitely. It was a subject of the utmost importance.

Mr. R. G. Perry, in the absence owing to illness of the Vice-Chairman (Sir William Pearce), seconded the resolution, and congratulated Sir Max Muspratt on the baronetcy conferred upon him.

Mr. A. T. Smith referred to the remarkable result which had followed their efforts as an Association to better the chemical trade. They cast their bread upon the waters and it came back laden with butter. (Laughter.) They had one very particular instance to record, and it arose from the speech by Sir William Alexander, as Chairman of the British Dyestuffs Corporation. He did not pretend that the results were due to the efforts of the Association, but he did say that the Association must have been of the utmost assistance to Sir William Alexander in the very arduous work he had undertaken. He might be perfectly certain, as far as the heavy chemical industry was concerned, that he would have the same co-operation in the future as he had had in the past, and he hoped the results would be quite as good. (Hear, hear.)

A Plea for Research

Dr. E. F. Armstrong said that the Association had certainly done well during the year, but it was desirable that chemical industry should try to stand on its own feet and not rely too much on Government patronage. Sir William Alexander, in his address to the shareholders of the British Dyestuffs Corporation, mentioned that a sum of £400,000 had been spent on research. The fact that it had been spent showed that one firm in this country—and that firm was typical of all the members of the Association—did realise the enormous importance of making itself strong on the scientific side as a preliminary to its success financially. It was only by research and by technical work that they could get an advantage in the future. Whatever the Association did as its primary object, in the representation of the chemical industry as a whole to the Government, it must never lose sight of its secondary object, namely, the encouragement of co-operation and of technical progress within the industry. (Cheers.)

Helping the Dyestuff Industry

Sir William Alexander said his Company had received from the members of the heavy chemical industry in recent times very real and concrete assistance in bringing down the prices of their products. In every case where it had been at all possible for them to meet the consumers they had done so, and in every case where it was possible for the consumers to pay a higher price they had paid it. He felt certain that their industry was going to pull through. (Hear, hear.)

He hoped that their industry would be of assistance to the other large industries which were embraced in the Association of British Chemical Manufacturers, and that as time went on they would find that they merited the confidence which was being placed in them.

The Transport Problem

The Rt. Hon. J. W. Wilson said that he was very glad that the Transport Committee had pursued the policy of negotiation, and, to a large extent, as far as possible, co-operation in the matter of railway rates and services. He foresaw that during the next twelve months and probably over a longer period, the lines were being set for a battle between two sets of business men—shareholders of the railway companies, on the one hand, and the traders on the other. He thought that there was a danger in being too hasty to have great cases discussed and published and the details of all the interstices of a business inquired into. If labour saw that there was a chance of their fighting each other in public they would seize the opportunity for using all the arguments to their advantage and, incidentally, to reflect on other industries besides the railway companies. He was sorry the invitation had gone out to join ranks, and that the Federation of British Industries had hastened to Court straight away. He hoped that they as another set of traders would pause before they joined issue and see whether they were not likely to get more by negotiations such as their Association had carried out, and he believed would continue to do. They should not hasten to join issue until they were sure they had exhausted the possibilities of getting what they wanted by less controversial methods.

Alcohol in Chemical Manufacture

Mr. F. H. Carr referred to the alcohol question. The importance of alcohol to the fine chemical industry, he said, had perhaps never been stated, and yet he thought that chemical manufacturers and fine chemical manufacturers in particular were coming to realise that it was a substance, as a chemical, which they could use, whereas hitherto it has always been regarded as a substance which was beyond their reach. Many still believed that the chief use of alcohol was as a beverage. Chemists and Americans did not believe that. (Laughter). It was the raw material, the coal tar, of the pharmaceutical chemical. The ethyl group entered into a large proportion of the synthetic compounds used in medicine, and hitherto the manufacture of such compounds had been practically impossible owing to the difficulties which had been met with in the early stages of manufacture in getting satisfactory arrangements with the Excise authorities. The work that had been done by the Committee had only been possible because of an entirely new state of affairs at the Board of Customs and Excise, and it was to such people as Sir Horace Hamilton and Sir Robert Robertson that their thanks must be chiefly given. They had in the concessions which they had given shown that they were at the dawn of a new era as regards the use of alcohol in chemical manufacture. The concessions which had been made permitted manufacturers who were commencing to use alcohol to use quantities up to 100 gallons without any restrictions as regards their receivers without the necessity of an officer being on the spot; and provided adequate figures were shown as regards the destination of the alcohol that was being used, they were quite satisfied to leave it with fairly moderate restrictions. He urged all those interested in fine chemical manufacture to make use of these privileges and to lay before the Association such difficulties as they might meet with in order that the Committee might go on with this work until they got every possible facility required for their manufacture.

Mr. Kenneth Chance associated himself with the remarks of Mr. Wilson as to the question of transport. He did not believe they were going to do the least bit of good by fighting under the Act. He thought the Federation of British Industries had made a great mistake. But there was a way in which they could act on purely business lines. The Association by the co-operation of its members one with another could bring a great deal of pressure to bear on the railway companies. They were not without competition; they had very strong competitors in road transport, and the chemical industry was in an infinitely better position to take advantage of that than any of the heavy industries such as steel, iron and coal, because while some of the members made purely heavy chemicals which were, no doubt, carried at very low rates, others made chemicals the railway rates on which were so high that road transport could be obtained at much lower figures. (Hear, hear). His company had during the last six or twelve months made a great deal of use of road transport and as a result of that they had obtained special rates from the railway companies on chemicals. If one company by its individual efforts could do that, could they not make use of that form of co-operation together?

British Empire Exhibition

Dr. H. Levinstein said the fact that the Council had been asked and had agreed to organise the Chemical Section of the Exhibition to be held at Wembley next year was a remarkable testimony to the Association. The mere fact that when they had a British Empire Exhibition the whole of the chemical exhibit could be dealt with by one organisation showed what an enormous stride the chemical industry had made in organisation since the last Exhibition of the same kind was held. He had not the slightest doubt that this chemical exhibit would make the same impression on chemists visiting the British Empire Exhibition as the wonderful exhibit shown by the Germans in Paris in the year 1900, which no doubt many of them remembered. That was a collective exhibit of the German dyestuff and chemical manufacturers. They had gone one better, thanks to the Association, and were making a chemical exhibit which would show, under one direction, the whole of the British Chemical Industry. When an exhibit of this kind could be organised by an Association of chemical manufacturers it had this enormous advantage: that the whole problem could be dealt with in a much more general and abler way than any individual manufacturer could do, and the upshot was that they would have a thoroughly representative British pure chemistry exhibit.

All these industries required for their development was a thoroughly competent organic chemical school in the country. People coming from abroad were apt not to attach too much importance to an exhibit made by a company, possibly because it was made by a company. But no person who took a long view would so regard their exhibit. They would know there was in it, beyond that desire of the State for having an exhibition, a really strong, vigorous, intelligent and organised school carrying out research on a large scale. Unless they knew what was behind the movement they would realise that in a term of years the industry would fail and that they had only to wait to see the extinction of it. On the other hand, if they saw what was in fact the case, that the development of pure science had shown enormous improvement not only in quality but in quantity in the chemical schools of the country which were superior to the German chemical schools, every person coming from abroad would know that there was behind this movement a solid backing of pure science, so that industries of this character would steadily improve.

Mr. Bernard Hickson endorsed the remarks of Mr. Chance with regard to the railway companies, and added that they had received very much assistance from the Traffic Department of the Association. He also referred to the question of the establishment of a Chair of Chemical Engineering The training of engineers who had as well as an engineering a chemical mind would be of great assistance to them in the future.

Mr. T. D. Morson expressed the hope that publicity would remain in the forefront of the policy of the Association. Individual firms could undoubtedly do a lot by advertising, but the propaganda work of the chemical industry as a whole must obviously be carried on by the Association.

The auditors (Messrs. Feasey & Co.) were re-appointed, and the Report of the Scrutineers was received and adopted.

That concluded the business of the Ordinary Meeting, which was followed by a special general meeting when the amount of the annual subscription payable by members of the Association for the year 1923-1924 was fixed at four-fifths of the sums laid down in Article 17 of the Articles of Association.

Sir John Brunner proposed and Mr. R. G. Perry seconded a vote of thanks to the Chairman, which was carried unanimously, and the proceedings then terminated.

Reflexions by a "Random Reader"

The Cambridge Week

"Virtue itself offends when coupled with forbidding manners"

A GREAT week in a great place! The Pasteurised may be permitted to ponder and paint its peculiarities but with the pocrene* pencil of Pegasus rather than that of a presuming Piscator. Paris may have dangers which Cambridge cannot offer but the ancient home of scholasticism is not always too too and has its peculiar seductions; these were soon discovered and greatly appreciated by foreign visitors, indeed we gathered that an official of our French *filiale* would like to take a special "research" course at the University. "Sermons in stones" were officially referred to at the Society's banquet as perhaps the chief allurement, yet to us it seemed that certain sacramental observances, in these degenerate, dry, despotic days almost peculiar to the place and to its only rival, were the greater attraction to those choice spirits who could appreciate their opportunity and get it. Even though it have a Vice-Chancellor and all ten commandments still run, a thirst may not only be raised there but sufficiently assuaged, so that a Bishop Magee may walk its streets with satisfaction, even sometimes wonder at what Ruskin calls the "tender viscosity of old wine"—think of it, how perfect the description: the *tender* viscosity of *old* wine—in its college combination rooms. We can only hope that his species will long flourish there to the confusion of all co-educationally bred sentiment and intolerance. Is it not written:—

"And malt does more than Milton can
To justify God's ways to man."

One distinguished worker was observed to be halt: the explanation he gave was "Golf Knee." Authorities better skilled in diagnosing the influence of environment, well posted in the doings of the day, however, inclined to the view that—perhaps after partaking of one of Professor Bone's curvilinear teas—he had been betrayed into sympathetic vibration with the well equilibrated, local tautomeride of carbonic oxide, of Portuguese origin: the lag in his progress was so clearly one to be referred for interpretation to the holder of the Jacksonian chair, not to Mr. Bernard Darwin.

In Paris, at the President's reception at the Elysée, the ballet, fortunately, was a thing apart—on a distinct and distant stage; it was thought desirable, indeed, that a well-known Professor of Chemistry should be withdrawn at an early period of the proceedings, leaving as reporters only certain brewing representatives together with a pillar of the Cambridge church and one or two sedate chemists of the physical school. At Cambridge, the President of the Society arranged that the ladies of the local corps, as well as those of his touring company, should all actively take the floor with himself and his friends, including a flirtatious Virginian and a grave and reverend American signor who footed it merrily throughout the evening and aided him right royally in his delicate task of encompassment. It was a company of Diehards, not only of dyestuff makers. Supported by the master of his college, even Sir William Pope could remain one of the audience, to be unavailingly tempted of Terpsichore. The Mayor, be it said, had sized up the Society in welcoming it to Cambridge, by at once referring members to the swings and roundabouts on the village green; in fact, these things were permissible, because, after all, Cambridge is but a village: a rivulet still meanders through its streets and it wonderfully simulates an air of primitive innocence. The Vice-Chancellor, perhaps, was less apt in his introductory remarks; at all events, he has much yet to learn of chemistry, as he spoke of chemists as a body of men devoted to pure science—not recognising that the main office of chemists, like that of his cloth, is to deal with the influence of impurity; that, if purity prevailed, there would be no chemistry and, therefore, no religion. He probably learnt to appreciate them during the week, as a fallen but cheerful race, therefore full worthy of his ministrations—though beyond all hope of redemption.

These Conferences are making clear to some of us that both the tongues and the toes of chemists must be more cultivated than in the past. Doubtless, at an early date, a Reader in Rabelais will be included in the chemical staff at Cambridge. At the mixed gathering in the early part of the week we had a master interpreter in Sir William Pope and the service he rendered by his diplomatic treatment of the international situation won the admiration of all. He is clearly the Lord Crewe of Chemistry: so tactfully polygot a sphinx is a new discovery in science; moreover, to such purpose has he read the classic literature of the past that the ladies from abroad all became ranged under his banner, prepared to scratch anyone who dared detract from his merits. Without him, the Cambridge meeting would have been impossible: indeed the International Union owes its effective existence mainly to his ability and multilingual skill.

We may hope that the two Presidents will early take steps to prepare for Copenhagen and enlist the service of tonguéd ladies such as Mrs. Chaston Chapman—who both in France and at Cambridge played the part of lady interpreter to the British delegacy to perfection, with the greatest charm and success—to aid them in organising language and deportment classes. All is not gold that glitters—chemistry does not make a complete man. We overheard, on several occasions, remarks by no means complimentary on the studied neglect of their appearance by juniors who came before the Union. Untidiness is not attractive even as a pose and it has been too much in evidence of late at large gatherings of scientific workers, in London particularly. More of the conventional halfpenny might well be expended by chemists, not only upon manners but upon boot polish, certainly at the tailors, indeed, it might be well to enlist Sir William McCormick's sympathies to this end—the subject is one both he and Sir Frank Heath could attend to with understanding and be able to judge for themselves as to the success with which their grants were expended. The foreign visitor has an eye for these things and being aware what our English traditions have been is alive to the declension in our habits. Some of us are accustomed to speak of Cambridge and Oxford as superior to all other schools, because they have given social polish: it will be sad if we are forced to withdraw our recommendation. Fortunately, a more dignified example was set by both bodies than by the Science Masters at Christmas, as throughout the week smoking was disallowed in the meeting room. May I dare say, parenthetically, "If only the smoker would realise how inelegant an instrument the pipe is for public display, how strictly one for concealed use."

One conclusion to be drawn from the Cambridge meeting is that the International Union is come to stay—so the decks should be cleared for action and all surplusage thrown overboard. It is necessary to realise that the proceedings must be in the grand style. The things done must be things that can only be done by true international co-operation, things outside ordinary business needs, the things that will count in placing our science upon the supreme pedestal it should and must occupy. We are agreed upon nothing, we have no consistent policy in chemistry—we must, therefore, get one. The great problems must fill our minds—we must realise, far more than we do, *that there are great and grave problems* and seek wittingly to advance the solution of these. The narrow minds can no longer be allowed to pipe the tune: criticism must be sharpened and rendered effective, in order that the scientific habit of mind may be made the common property of all workers, for as the good Milton saith: "Where there is much desire to learn, there of necessity will be much arguing, much writing, many opinions; for opinion, in good men, is but knowledge in the making."

That the Council should be truly representative of scientific activity and of scientific opinion seems clear. This is equally true of committees; the greatest care has to be taken in appointing these and there should be no haphazard nominations at the annual meetings. As the work of Committees and of the Council can only be done, in most part, by correspondence, the number of subjects under consideration at any one time should be strictly limited. The almost complete failure of the attempt made years ago at Geneva to establish a systematic nomenclature in chemistry should serve as a warning and make us careful in any further attempt to impose rules. It will be intolerable, if the freedom of scientific workers be in any way curbed, through the usurpation of authority by a few individuals acting nominally under international agreement. If the Union act as lawgiver, it must proceed warily and with utmost deliberation in all cases.

* The first syllable is sorbed after the manner of the Bristol school.

The step taken by the Union at Cambridge, in discussing scientific problems of the day, marks a great advance. To make such discussions effective, the reports upon which they are based should be prepared well in advance and issued in at least two languages a couple of months before the meeting takes place at which they are submitted for discussion.

These remarks by the way. Of chief importance at the moment are the more immediate lessons of the week. Undoubtedly, a deep impression was made upon visitors by the facilities Cambridge now affords for the prosecution of chemical science in all its ramifications. The world outside probably does not yet realise how great a school that at Cambridge is becoming, the more as it is in close association with a physical and mathematical school of outstanding promise. Its strength, its greatness, will be chiefly in the overmastering attractions it will offer to the talented youth of the country on the social and on the scientific side and the prestige the breadth of its training will confer—for Cambridge, we may hope, will be a school in which chemistry is taught as a whole, not bits of chemistry, especially one in which it is taught as a practical science, *the* fundamental science of life, not a branch of speculative mathematics but an experimental discipline. In it Pasteurs of the future should find their training: they are gravely needed. The great problems before us, upon the solution of which the stability of our civilisation depends, are in agriculture and in medicine; but men with the ability to appreciate the needs and find solutions are not there. The discovery of sufficient genius to keep the times in order is the task to which we must now devote our energies but before this must come the discovery how little genius there is at present in the field and some degree of modesty in our self-appraisement. The recent sensational appeal on behalf of cancer and the advertisement of a certain cure for tubercular disease are sufficient proof that sense of proportion is not in us: such window-dressing would not be possible were we scientific in our practice. The great need now at Cambridge is the development of chemistry on the organic side—without this, the magnificent new school now building for vital chemistry cannot be effective: it will have no straw wherewith to make its bricks.

Let us hope that the week will have served to bring home to the University the national importance of the subject it has so greatly complimented by the abundance and sincerity of its hospitality.

The Electronic Theory of Valency

A Conference of the Faraday Society

At Cambridge on Friday and Saturday, July 13 and 14, a general discussion was held by the Faraday Society on the "Electronic Theory of Valency" when a number of papers were read.

Professor T. M. Lowry read two papers, one on "Intramolecular Ionisation in Organic Compounds" and the other on "The Transmission of Chemical Affinity by Single Bonds." In the first of these papers it was pointed out that the theory of intramolecular ionisation could be extended to organic compounds, if it were assumed that double bonds could assume a form in which one carbon atom carried *eight* electrons, but the other only *six*, one pair of electrons only being shared. Since the former atom was then negatively and the latter positively charged, this type of double bond might be represented as made up of one covalency and one electrovalency. This extension of the theory of intramolecular ionisation brought the reactivity of organic compounds into line with the well-recognised activity of inorganic ions, and made it possible to regard all chemical action as ultimately ionic in character. The resting forms of the molecules need not be identical with their ionised or reactive forms. Examples were given, however, of organic compounds which probably have a permanently-ionised structure, comparable with that of metallic salts. In other cases evidence was quoted to show that this condition resulted from a definite process of activation.

Attention was also directed to several phenomena which received a simple explanation in the "crossed polarities" of compounds which had hitherto been classed as "conjugated." The properties of "multipolar ions" were referred to as furnishing a basis for a novel theory of tautomeric ions, and an explanation was suggested of their readiness to yield co-ordination-compounds.

In his paper on "The Transmission of Chemical Affinity by Single Bonds," Professor Lowry said that the reactivity of the methyl-group in ethyl crotonate was in harmony with the theory of polar double bonds. It could not be used as a proof of the existence of polarised single bonds (polar covalencies), since it received a simple interpretation in terms of Thiele's theory of conjugation. The small fluctuations which were observed in the strength of unsaturated acids as the double bond was moved along the chain might be attributed to steric influences such as those which Pickard had discovered in optically active compounds. The fact that amino-acids were sometimes stronger than the acids from which they were derived was attributed to the acylous character of the amino-group; this was usually masked by the direct neutralising action of the basic group. The conclusion was drawn that alternate polarities are characteristic of conjugated systems, and were not developed in chains of single bonds, where both acylous and basylous groups produced effects of constant sign.

The Nature of the "Double Bond"

Some "Remarks on Recent Contributions to the Theory of Induced Alternate Polarities in a Chain of Atoms" were contributed by Professors Arthur Lapworth and Robert Robinson, who pointed out among other matters that it was necessary to repeat the emphasis which had already been laid on the fact that induced polarity effects were much more easily damped by saturated atoms and single bonds than by unsaturated atoms and double bonds. Most of the examples quoted were of the rarer type and involved orientation in its wider connotation. A more general phenomenon concerned the changes in degree of reactivity which were associated with substitution, and the case of the methoxybenzyl bromides were quoted in this connection. It was claimed that Lowry's theory of mixed double bonds failed to suggest any explanation whatever of the most important facts which led to the recognition of the "Principle of Induced Alternate Polarities," and was inadmissible as an explanation of the principle, since it introduced theoretical limitations where no distinctions in practice were to be perceived. The remark that "a double bond in organic chemistry usually reacted as if it contained one covalency and one electrovalency" was, with its double qualification, unexceptionable, being no more than a restatement of the fact that unsaturated compounds sometimes undergo polar additive reactions.

Reactivity of Carbon Compounds

Professor Robert Robinson read a short paper entitled "Octet Stability in Relation to Orientation and Reactivity in Carbon Compounds," which mainly dealt with a few difficulties arising in connection with the author's theory of octets as applied to carbon chains and groupings such as carbonyl. It was stated that the views were equally sound on the basis of either the Rutherford-Bohr or Lewis-Langmuir atoms.

Dr. N. V. Sidgwick read a paper on "The Nature of the Non-Polar Link," dealing with the theoretical points in the explanation of particular examples on the present conception of these linkages, such as the sharing of a pair of electrons between two atoms. Several examples were introduced and the question of the orbits of the electrons was considered.

Brotherton and Co. *v.* Glasgow Corporation

At the Court of Session at Edinburgh on Thursday, July 12, an appeal was heard against Lord Blackburn's judgment in the action by Brotherton and Co., Ltd., ammonia and tar distillers, of Leeds, against the Corporation of Glasgow. The parties were at issue as to the construction of an article in a contract dealing with the price to be paid by the plaintiffs for tar and ammoniacal liquor supplied by the defendants. In the Outer House, Lord Blackburn repelled the whole of the plaintiffs' pleas in law and absolved the defendants, holding that the plaintiffs' construction of the article was erroneous.

The Lord President said he was not prepared to accept the construction which the Lord Ordinary had given to the article. The construction would be very greatly affected by the way the parties had conducted themselves in relation to the contracts up to 1916. At any rate, there was apparently no prospect of agreement as to the facts, and he saw no alternative but to send the case back in order that the parties might have an opportunity of clearing up these matters.

Chemical Matters in Parliament

Inspection of Factories

In reply to Mr. A. Greenwood (House of Commons, July 12), who asked the Home Secretary when the report of the Chief Inspector of Factories for 1922 would be published, Mr. Bridgeman said that he could not specify the precise date, which depended largely on the printers, but he had been advised that it would be possible to print the report before the end of the month. Mr. Greenwood, who also asked the Home Secretary if he realised that it was now July, 1923, and that the report for 1922 had not yet been published, was told by Mr. Bridgeman that he did realise that fact, but the report was very long and took a long time to compile, and he would do his best to see that it was printed a little earlier next year. Lord H. Cavendish-Bentinck then asked the Home Secretary how many factories and workshops had not been visited by one of H.M. factory inspectors for more than a year, and how many for more than two years.

Mr. Bridgeman, in reply, said that the figures for 1922 were in the case of factories 34,666 and 9,009; in the case of workshops 75,474 and 33,357.

Sewage Purification

Mr. Trevelyan (House of Commons, July 16) asked the Minister of Health whether, with a view to the purification of our rivers and economies in sewage disposal, he would consider the advisability of authorising an official inquiry into the possibility of adopting the process of septic gas production which is in operation in Australia and which has been successfully demonstrated by means of plants erected in Australia and in this country.

Mr. Neville Chamberlain referred Mr. Trevelyan to the answer which he gave on the 13th inst., in reply to a similar question by Mr. Rhys Davies.

Benzol and By-Products Extensions

At the ordinary general meeting of Benzol and By-Products, Ltd., in London on Thursday, July 5, Sir H. O. Bax-Ironside (presiding) said that the period covered by the accounts was undoubtedly one of the worst in colliery history. It was followed by several months of universal trade depression in the industry. As company directors they were not alone in anticipating a trade revival after the strike, for the same view was taken by very many others, and was, unfortunately falsified. During the whole of that dark financial period they never made a bad debt, and they would emerge from a remarkable industrial crisis in a stronger and sounder financial position. Whilst an important long-term contract had been entered into, having direct bearing upon raw material supplies, they were negotiating a twenty years' contract to light another and more important adjacent town with coke-oven gas. They already have a fifteen years' contract to light the town of Ossett. Profits in the past had been chiefly derived from their coke ovens and by-product works. It was proposed to extend the present battery of coke ovens and to add requisite by-product plant. It was intended to strengthen the board by the appointment of a well-known Yorkshire colliery director as a local director, he being chosen by the representatives of the largest collective body of preference shareholders. The report and accounts were adopted, and Mr. E. S. Shrapnell-Smith was re-elected a director, and Messrs. Newman Ogle, Ashworth and Co. were reappointed auditors.

Disinfectant Co.'s Failure

The public examination of Edward J. Richards, 9, Ladbroke Gardens, London, who formerly carried on business as a manufacturer of disinfectants, was appointed for the London Bankruptcy Court on Tuesday, before Mr. Registrar Mellor. His statement of affairs showed liabilities £603 and assets nil. The debtor and another person began to trade as dealers in disinfectants in March, 1921, carrying on the business under the style of the D.S. Disinfectant Co., at 3, Church Court, Richmond. His partner, however, retired twelve months later, and the debtor continued the business alone until September, 1921. The business was then closed in consequence of lack of capital and bad trade.

The Colouring of Poisons

To the Editor of The Chemical Age.

Sir,—In the interests of public safety it will be unfortunate if a recent decision of the General Medical Council be accepted as the final word in the highly important question of colouring deadly poisons. The facts are simple. After careful experimenting by British dyemakers and pharmacists, the Pharmaceutical Society of Great Britain recommended Brilliant Green to the Privy Council as a colouring for a preparation of strychnine. The Privy Council forwarded the suggestion to the General Medical Council as the body who could say whether brilliant green would interfere with the healing properties of the strychnine preparation in question. Thereupon the General Medical Council unanimously condemned the proposal, and that for six reasons, only two of which can be said to have a remote connection with the curative aspect of the question, namely: that, in certain mixtures, Brilliant Green undergoes colour changes which "might be objectionable" to patients, and that a coloured solution "would be objectionable" for hypodermic injection.

The four other points made were: (1) That it was only proposed to colour one strychnine preparation; (2) that risk would arise from keeping coloured solutions side by side with uncoloured; (3) that, the preparation being uncoloured in other countries, difficulties of an international kind would arise; and (4) that the question was a general one and should not be determined in the case of a single preparation of a single poison.

These four objections may or may not be just. What I do submit is that they are matters of policy to be determined by Parliament in open debate rather than settled autocratically by the most conservative of our trade unions.—Yours, etc.,

James Sexton.

House of Commons, S.W.1.
July 16, 1923.

British Engineering Standards Association

The British Engineering Standards Association held its fifth annual general meeting on Thursday, July 12, at the Institution of Mechanical Engineers, London.

The Chairman (Sir Archibald Denny), in reviewing the year's work, laid stress on the fact that the Association was faced with a deficit of some £1,700, and he hoped that both the Government, who represented the purchasing public, as well as industry as a whole, would assist in putting the finances of the Association on a more stable basis. The national character of the work of this organisation, devoted to simplification and the promotion of national economy in engineering and allied industries, was too well-known to require enlarging upon; it was not a profit-making concern, it had nothing to gain but much to give to industry generally and the country as a whole. The continually increasing amount of work which the Association had to deal with as a result of outside pressure, as well as the natural progress shown in all sections, necessitated more generous financial support than was given at present. Neither the Government nor industry as a whole would appear fully to appreciate the value of the labours voluntarily given by the 2,000 engineers who formed the Association which was doing so much both for the home as well as for the export trade of the country.

The "Fescol" Process

With reference to the paragraph on Fescol, Ltd., published last week, we are informed that the process builds up worn or wasted parts with pure nickel. The process is a cold one, and the deposited metal becomes an integral part of the base metal, giving cohesive adherence without injury or distortion to the part. It is in no way connected with any form of welding.

Recent Wills

Mr. Julius Robert Walter Hulsen, of Causey House, Hexham, Northumberland, chemical merchant and manufacturer, of Newcastle-upon-Tyne..	£8,387
Dr. Robert Railton Hallaway, of 5, Devonshire Street, Carlisle, chemist	£5,498
Mr. Alexander Esilman, of Southport, manufacturing chemist	£22,043

From Week to Week

DR. BANTING, the discoverer of insulin, is at present on a visit to London.

THE PRICE of motor spirit was reduced 3½d. per gallon and refined oils 1d. per gallon, as from Thursday.

THE EMPLOYEES of Bleasdale, Ltd., wholesale chemists, York, had an outing on Monday, July 9, in the neighbourhood of Coxwold.

MR. ARTHUR WINSTANLEY, B.Sc., Mining Lecturer to the Wigan Mining College, has been appointed Junior Mines Inspector for Scotland Division.

PROFESSOR BARKER, of the University of Leeds, has been appointed to attend the Pan-Pacific Science Congress at Sydney, New South Wales, on August 23 to September 3.

PROFESSOR J. W. McBAIN of Bristol University is to give a dedication address in connection with the opening of the Chemical Laboratory at Brown University, Rhode Island, United States.

AN EXPLOSION OF OXYGEN CYLINDERS occurred at a fire at Marshalsea Brothers' motor works, Taunton, last week, as a result of which two workmen were injured and considerable damage done.

THE PITCH PLANT at the Saltley Gas Works caught fire on Thursday, July 12, owing to the pitch over-boiling. Before the arrival of the fire brigade the outbreak had been overcome by chemical fire extinguishers.

AN OFFICIAL REPORT has been issued at Cambridge on the extension of the buildings of the Chemical Laboratory, which shows an expenditure on buildings and equipment during the last four years of more than £75,000.

PROFESSOR J. READ, professor of organic chemistry (pure and applied) since 1916 in the University of Sydney, has been appointed to the chair of chemistry and the directorship of the Chemistry Research Laboratory at St. Andrews University.

THE ANNUAL MEETING of the Devonshire Association opened at Salcombe on Tuesday, July 10, with an address by the president, Dr. A. E. H. Tutton, F.R.S., who dealt with the rise of the atomic theory from the time of Dalton to the present day.

MR. WILLIAM SMITH, M.A., B.Sc., Director of the County Work Department of the Edinburgh and East of Scotland College of Agriculture, has been appointed agricultural adviser to the Potash Syndicate for the Border and Northern English counties.

THREE BOYS WERE CHARGED at Blackburn on Monday with breaking into the Phœnix Chemical Works and committing thefts. Materials to the value of £250 were interfered with and rendered useless. A fine of 20s. was imposed on each of the accused.

ALL INVESTIGATIONS into the colouring of poisons used as medicines have now ceased, as a result of the recent recommendations by the British Medical Council. Investigations into the colouring of weed-killer and stock dip are, however, still proceeding.

TWO BOYS playing at Darlington on Tuesday on a broken-down motor lorry, belonging to the Witton Park Slag Works unscrewed the lid off an empty benzol drum, and struck a match, which caused an explosion which lifted the drum into the air and deposited it fifteen yards away, but was without fatal results.

AMONG THE RECENT AWARDS by the trustees of the Beit Memorial Fellowships for Medical Research is a fourth year fellowship of the value of £400 a year to Miss Katherine Hope Coward, D.Sc., London, a junior fellow now working at the Biochemical Laboratory, Institute of Physiology, University College, London.

THE DEATH IS ANNOUNCED of Sir Robert Lyle, chairman of Tate and Lyle, Ltd., sugar refiners, aged 63. When in 1921 Abram Lyle and Sons amalgamated with Henry Tate and Sons, Sir Robert became head of the firm, which is supposed to be the largest sugar refining business in Europe. Sir Robert was also chairman of the British Sugar Refiners' Association.

THE FIRST of the series of coal-dust explosion demonstrations under the Safety in Mines Research Board was to have been held at Eskmeals, near Millom, Cumberland, on Sunday, but was unavoidably postponed. The demonstration will take place next Sunday, when coal dust from the Busty Seam of the Durham coalfields will be exploded by a shot from a cannon.

AT THE MEETING of the British Cyanides Company on Wednesday, Mr. Kenneth M. Chance, the managing director, said that the company was now in a position to obtain from the nitrogen of the atmosphere raw material in unlimited quantities for cyanogen products. A process for the manufacture of permanganate of potash by electrolysis had also been perfected.

THE MANUFACTURE of synthetic stones for watch jewels, meters, measuring instruments, etc., is reported to be steadily increasing in Switzerland, and in hardness and uniform structure the synthetic products are found to be superior to natural stones. The average price of synthetic rubies is about £10 per kilogram unworked and £159 when cut, while synthetic blue sapphires cost £24 uncut and £400 cut.

THE ANNUAL AUTUMN MEETING of the Institute of Metals will be held this year in Manchester on September 10–13. The meeting will open with the second annual autumn lecture, by Sir Henry Fowler, on "The Use of Non-Ferrous Metals in Engineering." The mornings of September 11 and 12 will be devoted to the reading and discussion of papers, and visits will be paid to several large works in the vicinity of Manchester.

APPLICATIONS for grants for 1924 from the van't Hoff Fund, which are made to investigators in the fields of pure and applied chemistry, are required to be sent before November 1 by registered post to: Het Bestuur der Koninklyke Akademie van Wetenschappen; bestemd voor de Commissie van het "van't Hofffonds," Trippenhuis, Kloveniersburgwal, te Amsterdam. The amount available for 1924 is about 1,400 Dutch Florins.

THE DONOR of a gift of £20,000 for the foundation of scholarships at Sheffield University previously anonymous, is now understood to be Alderman Robert Styring. An undergraduate scholarship, which will be restricted to boys of King Edward the Seventh School, Sheffield, will be tenable in the faculty of pure science. The post-graduate scholarships are intended to enable graduates of the University to pursue scientific research in ferrous or non-ferrous metals.

THE FINANCIAL NEEDS of the Universities of Leeds and Sheffield were placed before the West Riding County Council meeting on Wednesday, July 12, at Wakefield, under the chairmanship of Sir James Hinchcliffe. Leeds University was represented by a deputation consisting of Mr. E. George Arnold (Pro-Chancellor), Sir Michael Sadler (Vice-Chancellor), and Mr. A. E. Wheeler (Registrar), and Sheffield by Sir Henry Hadow (Vice-Chancellor), Professor Ripper, and Mr. W. M. Gibbons (Registrar).

MR. H. O. WELLER, Director of Building Research, Department of Scientific Theoretical Research, announces that a first experiment with spent shale from the Scottish oil-fields, at the Building Research Board's experimental station, has produced a puzzolanic hydraulic cement of a tensile strength, at three months' age, greater than that required for Portland cement by the B.E.S.A. standard specification. The cement is of a pleasant light red colour, and is much harder than ordinary Portland cement.

THE INCORPORATION of fourteen dye works in Germany, recently, is attributed to the idleness of the largest colour works in the dye cartel owing to occupation of the Ruhr. The new companies have not joined the dye cartel and it is not believed that they will survive when the big plants start again. Among the companies are: Caesar and Loretz Co., Halle, capitalised at 9,000,000 marks; Chemische Fabrik, Dolbergen, with 10,000,000 marks; Chemische Fabrik Marienfelde, Berlin, with 22,000,000 marks; Ferdinand Klein Co., Frankfurt, with 40,000,000 marks.

A BOY named Norman Roberts, suing through his father, was awarded £1,050 damages and costs at the Birmingham Assizes on Saturday, against the Brownhills Chemical Works Co., in respect of injuries sustained. In addition the father was awarded the agreed sum of £170. The lad was cycling behind the defendant's lorry, which, it was alleged, stopped suddenly and reversed, causing him to fall beneath the vehicle and receive injuries which necessitated the amputation of his right arm from the elbow. The defence was that the accident was contributed to by the boy's negligence.

References to Current Literature

British

THEORIES.—The theory of spectra and atomic constitution. W. L. Bragg. *J.S.C.I.*, July 13, 1923, pp. 690–692.

The theory of acid–alkali solution equilibrium as applied to salts of moderately strong but sparingly soluble acids. E. B. R. Prideaux. *Chem. Soc. Trans.*, June, 1923, pp. 1624–1634.

METALS.—The colouring of metals. A. E. Tucker. *J.S.C.I.*, July 13, 1923, pp. 299–302 T.

ORGANIC SULPHUR COMPOUNDS.—Note on the preparation of pure dehydrothiotoluidine. R. F. Hunter. *J.S.C.I.*, July 13, 1923, p. 302 T.

HISTORICAL.—Baeyer memorial lecture. W. H. Perkin. *Chem. Soc. Trans.*, June, 1923, pp. 1520–1546.

REACTIONS.—The action of sulphuryl chloride on organic substances. Part II. T. H. Durrans. *Chem. Soc. Trans.*, June, 1923, pp. 1424–1429.

The action of sodium hyposulphite on cupric chloride in aqueous solution. J. B. Firth and J. Higson. *Chem. Soc. Trans.*, June, 1923, pp. 1515–1519.

COLLOIDS.—The protective action of potassium oleate on gold sols in water-alcohol mixtures. E. K. Rideal and L. L. Bircumshaw. *Chem. Soc. Trans.*, June, 1923, pp. 1565–1570.

The properties of some silver organosols. J. K. Giles and C. S. Salmon. *Chem. Soc. Trans.*, June, 1923, pp. 1597–1608.

The swelling of agar-agar. F. Fairbrother and H. Mastin. *Chem. Soc. Trans.*, June, 1923, pp. 1412–1424.

SYSTEMS.—The ternary system ammonium chloride—ferric chloride—water. F. W. J. Clendinnen. *Chem. Soc. Trans.*, June, 1923, pp. 1338–1344.

A critical solution temperature for solids in the binary system ammonium chloride—manganous chloride dihydrate. F. W. J. Clendinnen and A. C. D. Rivett. *Chem. Soc. Trans.*, June, 1923, pp. 1344–1351.

Mixed crystals and double salts: a comparison of systems containing water, ammonium chloride, and a chloride of manganese, iron, cobalt, nickel, or copper. A. C. D. Rivett and F. W. J. Clendinnen. *Chem. Soc. Trans.*, June, 1923, pp. 1634–1640.

SUBSTITUTION.—Substitution in vicinal trisubstituted benzene derivatives. Part I. W. Davies. *Chem. Soc. Trans.*, June, 1923, pp. 1575–1593.

United States

LIGHTING GAS.—Some of the latest developments in gas purification. E. H. Bird. *Chem. and Met. Eng.*, July 2, 1923, pp. 16–18.

ARTIFICIAL SILK.—Artificial silk. Part I. A description of the vicose process of artificial silk manufacture. A. Fath. *Chem. Age* (*N. York*), June, 1923, pp. 245–248.

RUBBER.—The future of the rubber industry. W. C. Geer. *Chem. Age* (*N. York*), June, 1923, pp. 251–253.

TECHNOLOGY.—The chemical engineer in bakery management. G. L. Montgomery and A. G. Wikoff. *Chem. and Met. Eng.*, July 2, 1923, pp. 12–15.

Metering viscous fluids. E. S. Smith. *Chem. and Met. Eng.*, July 2, 1923, pp. 20–22.

FOODSTUFFS.—The physico-chemical properties of strong and weak flours. Part IV. R. A. Gortner and P. F. Sharp. *J. Phys. Chem.*, June, 1923, pp. 567–576.

OXIDES.—Hydrous oxides. Part V. H. B. Weiser. *J. Phys. Chem.*, June, 1923, pp. 501–532.

HYDROGENATION.—Studies in the hydrogenation of benzene. G. Dougherty and H. S. Taylor. *J. Phys. Chem.*, June, 1923, pp. 533–557.

ACIDS.—Fluosilicic acid. The maximum concentration of the acid at room temperatures. C. A. Jacobson. *J. Phys. Chem.*, June, 1923, pp. 577–580.

ANALYSIS.—Dinitroso-resorcinol as a reagent for the quantitative determination of cobalt in the presence of nickel and other metals of the iron group. W. R. Orndorff and M. L. Nichols. *J. Amer. Chem. Soc.*, June, 1923, pp. 1439–1444.

Studies on the quantitative determination of praseodymium. P. H. M. P. Brinton and H. A. Pagel. *J. Amer. Chem. Soc.*, June, 1923, pp. 1460–1465.

The determination of formaldehyde in paraformaldehyde. P. Borgstrom and W. G. Horsch. *J. Amer. Chem. Soc.*, June, 1923, pp. 1493–1497.

The use of bromate in volumetric analysis. Part II. The influence of mercuric mercury upon bromic acid reactions. G. F. Smith. *J. Amer. Chem. Soc.*, June, 1923, pp. 1417–1422.

GERMANIUM.—Germanium. Part V. Extraction from germanium-bearing zinc oxide. Direct preparation of germanium dioxide free from arsenic. Detection of minute amounts of arsenic in germanium dioxide. L. M. Dennis and E. B. Johnson. *J. Amer. Chem. Soc.*, June, 1923, pp. 1380–1391.

ALCOHOLS.—The ionisation of alcohols. R. J. Williams and R. W. Truesdail. *J. Amer. Chem. Soc.*, June, 1923, pp. 1348–1353.

MOLECULAR COMPOUNDS.—Unsaturation and molecular compound formation. Part III. O. Maass, E. H. Boomer and D. M. Morrison. *J. Amer. Chem. Soc.*, June, 1923, pp. 1433–1438.

PHENOLS.—A synthesis of thymol from paracymene. Part II. M. Phillips. *J. Amer. Chem. Soc.*, June, 1923, pp. 1489–1493.

REDUCTION.—Reduction products of benzalpinacoline. G. A. Hill, C. S. Spear and J. S. Lachowicz. *J. Amer. Chem. Soc.*, June, 1923, pp. 1557–1562.

German

REACTIONS.—The action of phosphoric acid on colophonium, wood tar, and some members of the most important classes of substances. M. Melamid and E. Rosenthal. *Z. angew. Chem.*, June, 27, 1923, pp. 333–336.

The hydrogen halides as agents for the Beckmann transformation. F. Lehmann. *Z. angew. Chem.*, July 4, 1923, pp. 360–362.

Alkyl and alpharyl migration in the reduction of nitrobenzoylphenylhydrazone. G. Lockemann. *Z. angew. Chem.*, July 4, 1923, pp. 349–351.

The action of potassium acetate on aliphatic bromides as a method for the determination of constitution. Part I. B. K. Mereshkowsky. *Annalen*, May 18, 1923, pp. 231–242.

CERAMICS.—Lignite gas and its use in the ceramic industry. A. Faber. *Z. angew. Chem.*, June 27, 1923, pp. 336–337.

CRYOSCOPY.—The application of cryoscopy to pharmacy and the chemistry of foods. P. W. Danckwortt. *Z. angew. Chem.*, July 4, 1923, pp. 358–360.

The value of cryoscopy for technical varnish investigation. T. Scheiber and O. Nouvel. *Z. angew. Chem.*, July 4, 1923, pp. 353–355.

OXIDATION.—The mechanism of oxidation. Part V. Oxidation of aldehydes. H. Wieland and A. Wingler. *Annalen*, May 18, 1923, pp. 301–322.

ELECTRO-CHEMISTRY.—The electrochemical behaviour of bismuth and antimony in alkaline solution. G. Grube and F. Schweigardt. *Z. Elektrochem.*, June, 1923, pp. 257–264.

The electrolytic oxidation of formic acid. E. Müller. *Z. Elektrochem.*, June, 1923, pp. 264–274.

THEORY.—The theory of ionogen formation as a basis of the ionic theory, according to experiments as regards the nature of the non-ionised acids. A. Hantzsch. *Z. Elektrochem.*, June, 1923, pp. 221–246.

ANALYSIS.—The estimation of metal sulphides by heating in hydrogen sulphide. L. Moser and E. Neusser. *Chem.-Zeit.* Part I, June 26, 1923, pp. 541–543; Part II, July 7, 1923, pp. 581–582.

Colorimetric methods with the aid of William Ostwald's colour standard. F. V. v. Hahn. *Z. angew. Chem.*, July 11, 1923, pp. 366–369.

WOOD PRESERVATION.—Modern practice in wood impregnation. F. Moll. *Z. angew. Chem.*, July 11, 1923, pp. 369–371.

TEXTILES.—The influence of light on textile fibres. P. Waentig. *Z. angew. Chem.*, July 4, 1923, pp. 357–358.

FERTILISERS.—New phosphoric acid fertilisers. P. Krische. *Kali*, May 15, 1923, pp. 151–154.

HYDROGENATION.—The hydrogenation of naphthalene. R. Willstätter and F. Seitz. *Ber.*, June 6, 1923, pp. 1388–1407.

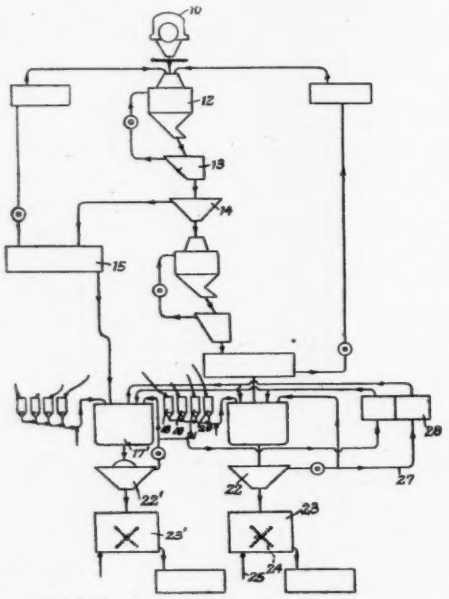
DEHYDROGENATION.—The kinetics of dehydrogenation catalysis. N. Zelinsky and N. Pawlow. *Ber.*, June 6, 1923, pp. 1249–1255.

Patent Literature

Abstracts of Complete Specifications

199,051. CONCENTRATION OF ORES AND MINERALS. E. C. R. Marks, London. From Eureka Metallurgical Co., 727, McIntyre Building, 68, South Main Street, Salt Lake City, Utah, U.S.A. Application date: December 10, 1921.

In a flotation process for concentrating ores, it is found that any mineral may be floated if the particles are coated with oil in a thick pulp having a low surface tension, and then propelled to the surface of a liquid having a high surface tension. The ore is crushed to 20 mesh in a crusher 10 and pulveriser 12, and then passes through a drag classifier 13 to a cone classifier 14, which separates slimes and sands. The surface tension of the pulp may be lowered by maintaining it as thick as possible, by heating it, and by adding substances such as sodium sulphide, lye, nitre cake, sodium carbonate or chloride, certain oils, or soluble soaps. The coating oil, such as petroleum sludge, may be added in a mixer 17 in the proportion of 5–25 lb. per ton of ore. About 0·5–4 lb. of turpentine may then be



199,051

added to diminish the surface tension, and acid and calcium sulphide from vessels 18, 19, 20, 21. The excess of water and oil are removed in a vessel 22, and the oiled pulp is run into water in a cell 23. The mixture is agitated by a paddle 24, without aeration, and the minerals are floated as a scum and drawn off. Air may be introduced at 25, for the purpose of providing large free surfaces within the liquid where the oiled minerals may separate. The slimes which were initially separated, pass from a thickener 15 to a mixer 17^1 where they are treated in a similar manner, but more oil, water and chemicals are necessary. The pulp then passes to a filter press 22^1 and the oily water separated is used for treating more pulp. The pulp is then agitated in a vessel 23^1. The liquid obtained from the first pulp may be drawn through a pipe 27 to a tank 28, from which it passes to the slimes mixer 17^1.

199,056. CEMENT, PROCESSES AND PLANT FOR THE MANUFACTURE OF. T. Rigby, 72, Victoria Street, London, S.W.1. Application dates: December 19, 1921; May 3, and September 16, 1922.

The process is for manufacturing cement in plant of the rotary kiln type. Hot gas from a rotary kiln is drawn through a flue to a drying duct, and thence to a fan. The engine of the power plant is supplied from a boiler and the exhaust passes to the drums of the film driers over which the slurry is spread. The plant enables the material in suspension to be dried by the hot gas from the kiln, thereby economising heat and obviating the need for separating dust from this gas. The gas is discharged from the drying duct at a temperature of about 80° C., and it may be supplied to it direct from the kiln or after using it for heating a boiler. The output of cement is increased, since the kiln is used only for heating the dry material. When the kiln gases are used directly for drying the slurry, a fuel economy of about 33 per cent. is obtained, but if used first for heating a boiler, an economy of 60 per cent. may be obtained.

199,073. MONTAN WAX, CHLORINATION OF. H. W. K. Jennings, London. From Firm of H. Stinnes, Mülheim-on-Ruhr, Germany. Application date, February 16, 1922.

An improved product is obtained by the chlorination of montan wax in the presence of water. The wax is first agitated with boiling water so that it becomes finely divided and suspended in water, and chlorine is then passed through for a prolonged period at 85°–95° C. The wax may be suspended in a 10 per cent. solution of caustic soda, or in milk of lime, and similarly treated with chlorine until the liquid becomes acid, the time required being shorter. A light brown wax-like product is obtained, which may be purified by washing, and is stable at high temperatures. Alternatively, the montan wax may be suspended in hydrochloric acid and treated with chlorate. The chlorination is accelerated if an iron chloride catalyst is used. Wax containing 8–12 per cent. of chlorine is light yellow and brittle, the softness increasing with the proportion of chlorine up to 30 per cent. The chlorinated product is not affected by water, and may be used as a substitute for beeswax.

199,091. NEW AROMATIC CARBONYL COMPOUNDS CONTAINING TRIVALENT ARSENIC, PROCESS FOR THE PREPARATION OF. O. Margulies, Technikerstrasse 5, Vienna. Application date, March 10, 1922.

Aldehydo- or keto-arsinic acids are treated with reducing agents for pentavalent arsenic, such as sodium hydrosulphite, phosphorus trichloride, phosphorous acid, sulphurous acid and hydriodic acid, sodium bisulphite, etc. The carbonyl group is not affected, and new compounds containing trivalent arsenic are obtained. Examples are given, using aldehydo- or keto-arsinic acids obtained by diazotising aromatic monamido or polyamido aldehydes or mixed aliphatic-aromatic, or aromatic mono-amidised or polyamidised ketones, and treating the products with an arsenite.

199,092. NEW DERIVATIVES OF ORGANIC ARSENIC COMPOUNDS, PROCESS FOR THE PREPARATION OF. O. Margulies, Technikerstrasse 5, Vienna. Application date, March 10, 1922.

Aromatic aldehydo- or mixed aliphatic-aromatic keto-arsinic acids, or the corresponding aldehydo- or keto-bodies containing trivalent arsenic, are treated with hydrazine or a hydrazine compound, yielding compounds in which the easily reducible carbonyl groups are not reduced in an undesirable manner. Several examples are given, using various arsinic acids and hydrazine compounds. The products are valuable for therapeutic purposes.

199,093. NEW ARSENOXIDES AND ARSENOBENZOLS, PROCESS FOR THE PREPARATION OF. O. Margulies, Technikerstrasse 5, Vienna. Application date, March 10, 1922.

Specification 199,092 (see above) describes the treatment of aromatic aldehydo or mixed aliphatic-aromatic keto arsinic acids with various hydrazine compounds, and it is found that the arsenic in the products is in the same form of combination and the same stage of oxidation as in the original material. In this invention the process is applied to obtain compounds in which the arsenic is in a lower stage of oxidation, i.e., arsenoxides or arsenobenzols. The arsinic acids or arsenoxides are treated with hydrazine compounds and the product containing the hydrazine radicle is reduced with sodium hydrosulphite, phosphorous trichloride, phosphorous acid, sulphurous acid and hydriodic acid, sodium bisulphite, etc. Examples are given.

(*Continued on page* 69)

(*Continued from page* 68)

199,095. RUBBER, PROCESS FOR THE TREATMENT OF. F. C. Jones, 212, Upper Thames Street, London, E.C.4. Application dates, March 11 and April 26, 1922.

The process is for producing a rubber solution or dough, which, when dried by evaporation or heat, leaves a solid vulcanised rubber. A solution of rubber is vulcanised by any process such as the Peachey process with sulphuretted hydrogen and sulphur dioxide, by sulphur chloride, or by sulphur. Such a solution gels in a short time, but while it is still a viscous solution it is mixed with a rubber precipitant such as acetone, which precipitates a rubber dough containing little solvent. The dough is non-adhesive if the precipitant is in excess of the solvent, but is adhesive if an excess of solvent such as benzene is present. To produce a non-gelling vulcanised solution the vulcanised solution is poured into a mixture of acetone and benzene, when the solution remains liquid, and precipitation does not take place. Such a solution yields solid vulcanised rubber when allowed to evaporate, but is otherwise stable.

199,154. SULPHUROUS ACID COMPOUNDS OF ISATIN ANILIDE OR ARYLIDES, PROCESS FOR THE PRODUCTION OF. C. Stephan, Altona, Germany. Application date, March 20, 1922.

In the production of a compound of isatin alpha-anilide by mixing a compound containing it with sulphurous acid, large quantities of dilute sulphuric acid were obtained, which were of little value, and the object is to avoid this. In this invention, ammonium sulphite or bisulphite is used in a proportion corresponding to the whole content of sulphuric acid, yielding the sulphurous acid compound of isatin alpha-anilide, which precipitates as yellowish-white crystals. Sulphur dioxide is evolved, and may be absorbed in ammonia to produce ammonium sulphite for use again. The isatin compound may be used for dyestuff manufacture withour further purification. The sulphuric acid is recovered as ammonium sulphate, which is readily marketable. If strong solutions are employed in this process, it is advisable to spray the mixture containing isatin alpha-anilide or arylides into the ammonium sulphite solution.

199,210. EVAPORATING, DISTILLING, HEATING OR COOLING FLUIDS, APPARATUS FOR. Blair, Campbell, and McLean, Ltd., and A. Blair, Woodville Street, Govan. Application date, May 4, 1922.

This apparatus is of the kind in which the fluid to be treated is circulated through nests of tubes, and the heating or cooling fluid is circulated around these tubes in a jacket. In this invention the outer casing contains only a few tubes, and a number of such casings are secured to end plates in the manner of tubes connected to a header. The adjacent ends of the casing tubes are joined by curved connections, and the small inner heating or cooling tubes pass freely through the tortuous outer casing thus formed. Each casing tube with its contained tubes can be disconnected as a unit.

NOTE.—Abstracts of the following specifications, which are now accepted, appeared in THE CHEMICAL AGE when they became open to inspection under the International Convention: 174,915 (Naugatuck Chemical Co.), relating to a process for vulcanising rubber, see Vol. VI, p. 465; 182,112 (Consortium für Elektrochemische Industrie Ges.), relating to esters and ethers of ethylidene glycol and vinyl alcohol, see Vol. VII., p. 322; 186,899 (Fabwerke vorm Meister Lucius and Brüning), relating to manufacture of methane, see Vol. VII., p. 830; 191,028 (Etablissements Poulene Frères and C. Oechslin) relating to hydroxylated aliphatic arsinic acids, see Vol. VIII., p. 215; 192,392 (Elektrizitätswerk Lonza), relating to manufacture of acetone from acetylene, see Vol. VIII., p. 377; 194,663 (A. Hambloch), relating to preparation of magnesium carbonate from magnesium carbonates and silicates containing calcium, see Vol. VIII., p. 547.

International Specifications not yet Accepted

197,632. VULCANISING INDIA-RUBBER. Naugatuck Chemical Co., Elm Street, Naugatuck, Conn., U.S.A. (Assignees of S. M. Cadwell, 200 Ames Avenue, Leonia, N.J., U.S.A.). International Convention date, May 15, 1922.

A vulcanisation accelerator comprises the reaction product of an open carbon chain aldehyde having between 2 and 8 carbon atoms in the chain, and ammonia. The accelerator is used in the proportion of about 0·5 per cent. of the rubber, and the vulcanising is effected in 60 minutes at 40 lb. steam pressure. Suitable aldehydes are heptaldehyde, propionaldehyde, cinnamylaldehyde, iso-valeraldehyde. Instead of adding the ammonia, the mixture may be exposed to ammonia gas.

197,647. HYDROGEN AND OXYGEN FROM WATER. C. E. Laurent, 4, Rue St. Nicolas, Maisons Lafitte, Seine-et-Oise, France. International Convention date, May 13, 1922.

Hydrogen and oxygen are obtained by passing steam at 125°–400° C. over a catalyst. The catalyst consists of a mixture of three substances: (1) a salt of arsenic, mercury, silver, phosphorus, barium, sulphur, selenium, tellurium, boron, cyanides or oxalates; (2) graphite, coal or coke; (3) a salt of lead, zinc, tin, antimony, bismuth, or alumina, silica, magnesia, etc. The catalyst mixture is made up into small balls or a porous mass.

197,655. AMMONIA SYNTHESIS. L. Casale, 9, Via del Parlamento, Rome. International Convention date, May 13, 1922. Addition to 194,740.

Part of the ammonia produced by synthesis is withdrawn as it is formed, and the remainder is allowed to circulate so that the reaction gases are diluted and overheating of the catalyst is avoided. The catalysts used enable the synthesis to be conducted at a lower temperature than usual.

197,690. FERTILIZERS. Soc. d'Etudes Chimiques pour l'Industrie, 8, Quai du Cheval Blanc, Geneva. International Convention date, May 15, 1922.

A porous material, such as peat, turf, clay, pozzuolana, etc., is treated with a concentrated solution obtained from calcium cyanamide, and the mixture heated in an atmosphere of nitrogen, oxygen, air or carbon dioxide to a temperature of 60°–90° C. and a pressure of 5–25 atmospheres. The porous material may be the residue obtained by treating calcium cyanamide with carbon dioxide as in specification 182,134 (see THE CHEMICAL AGE, Vol. VII, p. 322). Peat or turf treated in this manner contains urea, and its nitrogen content may be increased by repeating the process.

197,702. CEMENTS. A. F. Mueller, Wernigerode, Herz, Germany. Assignee of E. Grothe, 15, Kranoldstrasse, Neukölln, Berlin. International Convention date, May 15, 1922.

The process is for producing hydraulic cement. Foundry slag is finely divided and mixed with material containing iron, silica, alumina, lime and magnesia in proportions depending on the composition of the slag. Clinker may also be added, preferably that freed from coke and coated with clay, chalk, gypsum or carbide sludge. The iron-containing material may be bog ore, Permian limestone, brown ore, Porta stone, ferruginous sandstone, aluminous siderite, slate, ferruginous earths, finely divided iron, etc. Ferruginous clay is added to supply alumina, and mica-sand to supply magnesia. Lime is added in the form of slaked lime, lime-kiln waste, gypsum dust, or carbide sludge. The setting is accelerated and strength increased by adding a small quantity of sodium carbonate.

197,903. REDUCING ORES. Soc. Anon. J. Cockerill, Seraing, Belgium. International Convention date, May 18, 1922.

An oxidised ore of iron or other metal is intimately mixed with coal dust, coke or sawdust, and briquetted under pressure. The briquettes are heated to a temperature below fusion by means of a neutral flame in a neutral atmosphere, obtained by regulating the air supply to the furnace. The product is cooled in the neutral atmosphere.

LATEST NOTIFICATIONS.

200,482. Process of treating liquor accruing from the lixiviation of vegetable matter. Colas, L. J. B. A., Colas, A. P. J., and L'Alfa, Soc. Anon. pour la Fabrication des Pates de Cellulose. July 5, 1922.

200,508. Method for obtaining organic super-oxides in a finely divided condition. Naamlooze Vennoolschap Vereenigde Fabricken van Chemische Producten. July 4, 1922.

200,509. Separators. Sturtevant Mill Co. July 7, 1922.

200,511. Manufacture of carboxylic acid chlorides. Fabwerke vorm. Meister, Lucius, and Brüning. July 6, 1922.

Specifications Accepted, with Date of Application

186,606. Hydrofluoric acid, Purification of. H. Howard. September 29, 1921.

188,335. Sodium bicarbonate and other salts contained in natural soda bicarbonated mineral waters, Process of extracting. Appareils et Evaporateurs Kestner. November 5, 1921.

191,049. Pulverising mill. D. V. Sherban. December 23, 1921.

192,041. Zinc electrolytes. C. Bianco. January 17, 1922.

199,750. Hydrazine, Manufacture of. R. A. Joyner and Nobel's Explosives Co., Ltd. December 29, 1921.

199,7 1. Vegetable charcoal, Manufacture of. L. H. Bonnard. December 13, 1921.

199,753. Flotation of particles of solid matter, Process and apparatus for effecting. B. E. Eldred. January 5, 1922.

199,754. Cellulose acetate, Dyeing of. R. Clavel. January 5, 1922.

199,759. Formaldehyde, Manufacture of aqueous solutions of. L. M. Hirschberg. February 22, 1922.

199,760. Formaldehyde, Production of—by catalysis. L. M. Hirschberg. February 22, 1922.

199,766. Low boiling-point hydrocarbons, Process for the continuous production of. R. W. Hanna. February 27, 1922.

199,771. Azo dyestuffs, Manufacture of. A. G. Bloxam. (*Chemische Fabrik Griesheim Elektron.*) March 2, 1922.

199,795. Clay, Purification of. W. Feldenheimer and W. W. Plowman. March 27, 1922.

199,847. Sprinklers for gas scrubbers, cooling towers and the like. C. Still (firm of) and A. Kuhn. April 6, 1922.

199,853. Rotary filters. Plauson's Parent Co., Ltd. (*H. Plauson.*) April 10, 1922.

199,870. Acridine derivatives, Manufacture of therapeutically active. O. Y. Imray. (*Farbwerke vorm. Meister, Lucius & Brüning*). April 19, 1922. Addition to 176,038.

199,886. Oxidation processes. J. Y. Johnson (*Badische Anilin & Soda Fabrik*). May 2, 1922.

199,929. Vertical retort gas-making apparatus. Humphreys and Glasgow, Ltd. (*R. M. Searle*). June 6, 1922.

Applications for Patents

Barnard, C. M. Manufacture of intermediate bodies and dye-stuffs therefrom. 17,821. July 10.

Barnard, C. M. Manufacture of dye-stuffs. 17,822. July 10.

Bloxam, A. G., and Chemische Fabrik Griesheim-Elektron. Manufacture of azo dyestuffs. 18,008. July 11.

Bodrero, B. Production and use of sulphuro-phosphate. 18,087. July 12.

Dreyfus, H. Treatment of cellulose derivatives. 18,061. July 12.

Lilienfield, L. Manufacture of cellulose ethers. 17,764. July 9. (Austria, July 13, 1922).

Lilienfield, L. Preparing alkali celluloses. 17,765. July 9. (Austria, July 13, 1922.)

Lilienfield, L. Production of cellulose conversion products. 17,766. July 9. (Austria, June 6.)

Lilienfield, L. Preparing low-water content alkali cellulose. 18,091. July 12. (Austria, July 13, 1922.)

Lilienfield, L. Preparing cellulose ethers. 18,187. July 13. (Austria, July 13, 1922.)

Ling, A. R., and Nanji, D. R. Treating starch. 17,934. July 11.

Moeller, J. F. L. Fractional distillation of hydrocarbons. 17,837. July 10.

Soc. Chimique des Usines du Rhône. Deglutination of artificial silk, etc. 17,967. July 11. (France, October 26, 1922.)

Souchon, P. Bleaching cellulose pulp for manufacture of paper. 17,883. July 10.

Trumble, M. J. Treating hydrocarbons. 18,107. July 12.

Vogel, H. Manufacture of colloidal sulphur. 18,250. July 14.

Wilson and Sons, Ltd., E., and Young, A. E. Drying, dyeing, vulcanising, etc. 17,946. July 11.

Patents Court Cases

APPLICATIONS have been made under Sec. 24 of the Patents and Designs Acts, 1907 and 1919, for the following patents to be endorsed "Licences of Right":—22,923/14 (A. M. McAfee), relating to the manufacture of aluminium chloride; 22,924/14 (A. M. McAfee), relating to processes for improving oils; 191,582 (R. Haddan—Gulf Refining Co.), relating to the recovery of aluminium chloride; 193,188 (R. Haddan—Gulf Refining Co.), relating to the manufacture of low boiling oils; 140,090 (L. J. Terneden), relating to the manufacture of ammonia and gas by distillation of fuel in vertical retorts of rectangular cross section.

Ramsay Memorial Fellowship Awards

THE Ramsay Memorial Fellowship Trustees announce the following elections to Fellowships and renewals of Fellowships for the Session 1923–24:—

British Fellowship of £300 to Mr. Samuel Coffey, M.Sc., London, Ph.D., Leiden, to carry out Research at University College, London.

A British Fellowship of £300 to Mr. Alan Francis Titley, B.Sc., Bristol, D.Phil., Oxford.

A British Fellowship of £300, renewed to Dr. R. W. Lunt, B.Sc., M.Sc., Ph.D., Liverpool, at present working at University College, London.

A Glasgow Fellowship of £300 to Mr. Thomas S. Stevens, B.Sc., to carry out Research work at the University of Glasgow.

A Glasgow Fellowship of £300 renewed to Mr. J. A. Mair, to enable him to continue work at the University of Glasgow.

A Norwegian Fellowship of 5,400 kroner, to Mr. Gunard Weidesmann, to work at Cambridge under Professor Gonwlan Hopkins.

A French Fellowship of the value of £100, plus 14,000 francs, to Dr. H. Weiss, of La Sorbonne, who will work under Professor Sir William Bragg at the Royal Institution (Davy Faraday Laboratory).

A Netherlands Fellowship of £300 to Mr. J. Kalff, doctorandus in chemistry of Amsterdam.

A Danish Fellowship of £300 to Mr. Kristian Hφjendahl, who will continue work at the University of Liverpool.

Appointments to the Canadian, Greek, Italian, and Swedish Fellowships will be announced shortly.

"The amount raised in the Fellowship Trust established in memory of Sir William Ramsay is the greatest memorial ever raised to a man of science," said Sir Gregory Foster, Provost of University College, London, at the first dinner in honour of the Ramsay Memorial Fellowship Trustees, at University College, on Thursday, July 12. Sir Gregory explained that £56,000 was raised in this country in memory of Sir William Ramsay. Adding to that, the capital value of fellowships contributed by the Dominions and foreign countries, the total of the memorial fund was £120,000. The work of the trust consisted of two principal features. One was the establishment of a number of fellowships for British chemists, tenable in any university or college of the United Kingdom. One or two of these were given each year. The second feature was the establishment of fellowships by the Dominions and foreign Governments. The result had been to bring some of the most carefully selected and eminent young chemists from the Dominions and abroad to undertake research work in universities and colleges of the United Kingdom. This scheme had great potentialities, and it was bringing a steady stream of the most highly trained research workers to this country. Some of the countries participating in the scheme were Canada, Denmark, France, Greece, Italy, Japan, the Netherlands, Norway, Spain, Sweden, and Switzerland. There had been 21 fellowships since 1919 held in Oxford, Cambridge, London, St. Andrews, and Liverpool. The results already had amply justified the expectation of those responsible for the foundation of the scheme.

A Successor for Sir James Dewar

THE Syndicate appointed to consider the regulations for the Jacksonian professorship at the University of Cambridge, on the vacancy caused by the death of Sir James Dewar, recommend that it be defined to be a professorship of natural experimental philosophy as relating to physics and chemistry, and suggest that a professor should be appointed whose work would advance the knowledge of chemical physics on the lines of recent physical, atomic, and molecular research.

A Review of Liquid Fuel Problems

A SPECIAL number of *Chemie et Industrie* has been issued in connection with the International Liquid Fuel Exhibition held at Paris in October of last year. The issue, dated May, 1923, contains in 900 pages, full illustrated accounts of the conferences held at the exhibition, with the complete papers of the petroleum, shale, peat and lignite, tar and benzol, alcohol, and vegetable oil sections. The whole forms a most useful review of the liquid fuel problem in all its aspects.

Market Report and Current Prices

Our Market Report and Current Prices are exclusive to THE CHEMICAL AGE, and, being independently prepared with absolute impartiality by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., may be accepted as authoritative. The prices given apply to fair quantities delivered ex wharf or works, except where otherwise stated. The current prices are given mainly as a guide to works managers, chemists, and chemical engineers; those interested in close variations in prices should study the market report.

London, July 18, 1923.

BUSINESS during the past week has again been on small lines with consumers still buying on a hand-to-mouth basis.

Export inquiry is slightly better, although there is not much actual business passing.

General Chemicals

ACETONE has met with fair inquiry, and the price is inclined to go higher.

ACID ACETIC is much firmer, with stocks light, and an increase in price is not unlikely.

ACID CITRIC is unchanged in value, but in better demand.

ACID FORMIC is quiet.

ACID OXALIC continues easy, with the price in buyers' favour.

BARIUM CHLORIDE is lower and in only very small demand.

BLEACHING POWDER is unchanged.

CREAM OF TARTAR is slightly higher with better demand.

FORMALDEHYDE has registered a sharp advance during the week, and stocks are almost negligible.

LEAD ACETATE is in good request; price unchanged.

LITHOPONE is unchanged in value, with a moderate demand.

MAGNESIUM CHLORIDE is inclined to be easier and in good supply.

CAUSTIC POTASH is unchanged.

PRUSSIATE OF POTASH is in slightly better demand at last week's figures.

SODIUM ACETATE continues firm, with supplies on the light side.

SODIUM BICHROMATE—Foreign supplies are still off the market, and English makers are meeting with a fair demand.

SODIUM NITRITE is firmer and in good demand.

SODIUM PHOSPHATE is firmer and the demand is good.

SODIUM PRUSSIATE shows no signs of improving.

SODIUM SULPHIDE remains an easy market with keen competition for any business which is passing.

ZINC OXIDE is unchanged.

Pharmaceutical Chemicals

ACETANILID is steady, with fair business passing. Higher prices would seem justified, based upon the Continental makers' current quotations.

ACID LACTIC is quiet and unchanged, orders being confined to buyers' immediate requirements.

ACID SALICYLIC is easy.

BROMIDES.—Slow; position unchanged.

COCAINE.—Firm.

HEXAMINE.—Unsettled.

HYDROQUINONE.—Little demand.

VANILLIN.—Small lots are in steady demand. No large business is reported.

Coal Tar Intermediates

Business during the past week has been a little more interesting.

ALPHA NAPHTHOL.—Inquiries have been received both on home and on export account, and the price is very firm.

ALPHA NAPHTHYLAMINE continues in demand at last quoted figures.

ANILINE OIL.—Export buyers are much interested, and considerable sales are reported.

BENZIDINE BASE AND SULPHATE.—Inquiries are in the market.

BETA NAPHTHOL is without special feature.

DIMETHYLANILINE.—Home trade orders have been booked.

DIPHENYLAMINE is steady, with home business passing.

NAPHTHIONIC ACID has been a firm business, and stocks are short.

NAPHTHIONATE OF SODA.—The price is very firm, and makers state that they are over-sold.

RESORCIN.—A few home buyers are interested.

Coal Tar Products

The market generally is quiet, and business is limited.

90% BENZOL is steady at 1s. 6d. to 1s. 7d. per gallon on rails in the North.

PURE BENZOL is quietly steady at 2s. 1d. per gallon in the North and 2s. 3d. to 2s. 4d. per gallon in London.

CREOSOTE OIL is a little firmer, and is quoted at 8½d. to 8⅝d. per gallon in the North and 9¼d. to 9½d. per gallon in the South.

CRESYLIC ACID is worth about 2s. 11d. per gallon on rails for the pale quality 97/99%, while the dark quality 95/97% is quoted at 1s. 9d. to 1s. 10d. per gallon on rails.

SOLVENT NAPHTHA is in poor demand, at 1s. 4d. per gallon on rails in the Midlands.

HEAVY NAPHTHA is plentiful at 1s. 6d. per gallon on rails.

NAPHTHALENES.—There is little demand for the lower qualities, which are still quoted at £6 10s. to £7 per ton, but some business has been done in 74/76° and 76/78° at £9 to £9 15s. per ton.

PITCH.—The market is rather quieter, but without change in prices—namely, 150s. to 152s. 6d. per ton, f.o.b. London, and 145s. to 150s., f.o.b. East and West Coasts.

Sulphate of Ammonia

There is some inquiry for export, but no change in values.

[*Current Market Prices on following pages.*]

The New Petroleum Bill

A REPORT by the Select Committee of the House of Lords on the Petroleum Bill, issued as a White Paper on Tuesday, July 17, states that the objects of the Bill are to transfer the licensing power in the case of large installations from the local authority to the central Government, and to extend the control over petroleum spirit to other kinds of petroleum; also to remedy some obvious defects in the existing law and to bring it into harmony with modern requirements. The Committee are satisfied that the uncertainty as to the operation of Government control would materially retard the development of oil storage in this country. The increase in the use of fuel oil for ships instead of coal illustrates the difficulty of placing any handicap upon oil storage in this country. The Committee state that the steady growth in the national demand for petroleum of all grades for domestic, transport, and industrial purposes is well illustrated by the actual total import figures since 1900 as follow:—1900, 1,073,000 tons; 1910, 1,285,000 tons; 1919, 2,724,000 tons; 1922, 4,476,000 tons. The Committee consider that the regulation of this huge industry should rest with one single Government Department.

Chemicals for Nicaragua

H.M. CONSUL at Managua (Mr. T. J. Rees) has informed the Department of Overseas Trade that although the supply of catalogues and price lists available at the Consulate is very limited, he has, nevertheless, been able to divert orders to the United Kingdon through their use. Similar conditions obtain at Leon and Granada. The Consul suggests, therefore, that there are good prospects of increasing British trade by supplying him, and the Consular Officers at Leon and Granada, with catalogues and price lists of manufacturers of several products, including fine and pharmaceutical chemicals, pottery and glassware. Further, should samples be supplied, the Consul would be pleased to use them to the best possible advantage. United Kingdon firms desiring to take advantage of the possibilities offered, should forward three copies (for use at the three ports named) of their catalogues, etc., directly to His Majesty's Consul, British Consulate, Managua, Nicaragua.

Current Market Prices

General Chemicals

	Per	£	s.	d.		£	s.	d.
Acetic anhydride, 90–95%	lb.	0	1	4	to	0	1	5
Acetone oil	ton	90	0	0	to	95	0	0
Acetone, pure	ton	122	10	0	to	125	0	0
Acid, Acetic, glacial, 99–100%	ton	71	0	0	to	72	0	0
Acetic, 80% pure	ton	50	0	0	to	51	0	0
Acetic, 40% pure	ton	25	0	0	to	26	0	0
Arsenic, liquid, 2000 s.g.	ton	88	0	0	to	90	0	0
Boric, commercial	ton	50	0	0	to	55	0	0
Carbolic, cryst. 39–40%	lb.	0	1	5	to	0	1	5½
Citric	lb.	0	1	8	to	0	1	8½
Formic, 80%	ton	50	0	0	to	51	0	0
Hydrofluoric	lb.	0	0	7½	to	0	0	8½
Lactic, 50 vol.	ton	36	0	0	to	38	0	0
Lactic, 60 vol.	ton	42	0	0	to	44	0	0
Nitric, 80 Tw.	ton	27	0	0	to	28	0	0
Oxalic	lb.	0	0	6½	to	0	0	6¾
Phosphoric, 1.5	ton	35	0	0	to	38	0	0
Pyrogallic, cryst.	lb.	0	5	9	to	0	6	0
Salicylic, technical	lb.	0	1	9	to	0	2	0
Sulphuric, 92–93%	ton	6	0	0	to	7	0	0
Tannic, commercial	lb.	0	2	3	to	0	2	9
Tartaric	lb.	0	1	5	to	0	1	5½
Alum, lump	ton	12	10	0	to	13	0	0
Chrome	ton	28	0	0	to	29	0	0
Alumino ferric	ton	7	0	0	to	7	5	0
Aluminium, sulphate, 14–15%	ton	8	10	0	to	9	0	0
Sulphate, 17–18%	ton	10	10	0	to	11	0	0
Ammonia, anhydrous	lb.	0	1	6	to	0	1	8
.880	ton	32	0	0	to	34	0	0
.920	ton	22	0	0	to	24	0	0
Carbonate	ton	32	15	0			—	
Chloride	ton	50	0	0	to	55	0	0
Muriate (galvanisers)	ton	35	0	0	to	37	10	0
Nitrate (pure)	ton	35	0	0	to	40	0	0
Phosphate	ton	65	0	0	to	68	0	0
Sulphocyanide, commercial 90%	lb.	0	1	1	to	0	1	3
Amyl acetate, technical	ton	225	0	0	to	260	0	0
Arsenic, white powdered	ton	73	0	0	to	75	0	0
Barium, carbonate, Witherite	ton	·5	0	0	to	6	0	0
Carbonate, Precip.	ton	15	0	0	to	16	0	0
Chlorate	ton	65	0	0	to	70	0	0
Chloride	ton	15	10	0	to	16	0	0
Nitrate	ton	33	0	0	to	35	0	0
Sulphate, blanc fixe, dry	ton	20	10	0	to	21	0	0
Sulphate, blanc fixe, pulp	ton	10	5	0	to	10	10	0
Sulphocyanide, 95%	lb.	0	0	11	to	0	1	0
Bleaching powder, 35–37%	ton	10	7	6	to	10	17	6
Borax crystals	ton	27	0	0	to		—	
Calcium acetate, Brown	ton	11	10	0	to	12	0	0
Grey	ton	19	15	0	to	20	0	0
Carbide	ton	16	0	0	to	17	0	0
Chloride	ton	5	15	0	to	6	0	0
Carbon bisulphide	ton	35	0	0	to	40	0	0
Casein technical	ton	100	0	0	to	105	0	0
Cerium oxalate	lb.	0	3	0	to	0	3	6
Chromium acetate	lb.	0	1	1	to	0	1	3
Cobalt acetate	lb.	0	6	0	to	0	6	6
Oxide, black	lb.	0	9	6	to	0	10	0
Copper chloride	lb.	0	1	1	to	0	1	2
Sulphate	ton	27	0	0	to	28	0	0
Cream Tartar, 98–100%	ton	90	0	0	to	92	10	0
Epsom salts (*see* Magnesium sulphate)								
Formaldehyde, 40% vol.	ton	97	10	0	to	98	0	0
Formusol (Rongalite)	lb.	0	2	1	to	0	2	2
Glauber salts, commercial	ton	4	10	0	to	5	0	0
Glycerin crude	ton	65	0	0	to	67	10	0
Hydrogen peroxide, 12 vols.	gal	0	2	2	to	0	2	3
Iron perchloride	ton	18	0	0	to	20	0	0
Sulphate (Copperas)	ton	3	10	0	to	4	0	0
Lead acetate, white	ton	43	0	0	to	45	0	0
Carbonate (White Lead)	ton	43	0	0	to	45	0	0
Nitrate	ton	44	10	0	to	45	0	0
Litharge	ton	37	0	0	to	39	0	0
Lithophone, 30%	ton	22	10	0	to	23	0	0
Magnesium chloride	ton	4	5	0	to	4	10	0
Carbonate, light	cwt.	2	10	0	to	2	15	0
Sulphate (Epsom salts commercial)	ton	6	10	0	to	7	0	0
Sulphate (Druggists')	ton	10	0	0	to	11	0	0
Manganese Borate, commercial	ton	65	0	0	to	75	0	0
Sulphate	ton	45	0	0	to	50	0	0
Methyl acetone	ton	78	0	0	to	80	0	0
Alcohol, 1% acetone	ton	105	0	0	to	110	0	0
Nickel sulphate, single salt	ton	38	0	0	to	39	0	0
Ammonium sulphate, double salt	ton	38	0	0	to	39	0	0

	Per	£	s.	d.		£	s.	d.
Potash, Caustic	ton	35	0	0	to	36	0	0
Potassium bichromate	lb.	0	0	5½	to	0	0	6
Carbonate, 90%	ton	31	0	0	to	32	0	0
Chloride, 80%	ton	9	0	0	to	10	0	0
Chlorate	lb.	0	0	3½	to		—	
Metabisulphite, 50–52%	ton	65	0	0	to	70	0	0
Nitrate, refined	ton	38	0	0	to	40	0	0
Permanganate	lb.	0	0	10	to	0	0	10½
Prussiate, red	lb.	0	3	0	to	0	3	2
Prussiate, yellow	lb.	0	1	3	to	0	1	3½
Sulphate, 90%	ton	10	10	0	to	11	0	0
Salammoniac, firsts	cwt.	3	3	0	to		—	
Seconds	cwt.	3	0	0	to		—	
Sodium acetate	ton	25	0	0	to	25	10	0
Arsenate, 45%	ton	45	0	0	to	48	0	0
Bicarbonate	ton	10	10	0	to	11	0	0
Bichromate	lb.	0	0	4½	to	0	0	4¾
Bisulphite, 60–62%	ton	21	0	0	to	23	0	0
Chlorate	lb.	0	0	3	to	0	0	3¼
Caustic, 70%	ton	19	10	0	to	20	0	0
Caustic, 76%	ton	20	10	0	to	21	0	0
Hydrosulphite, powder	lb.	0	1	5	to	0	1	6
Hyposulphite, commercial	ton	10	10	0	to	11	0	0
Nitrite, 96–98%	ton	27	10	0	to	28	0	0
Phosphate, crystal	ton	16	0	0	to	16	10	0
Perborate	lb.	0	1	0	to	0	1	1
Prussiate	lb.	0	0	6½	to	0	0	7
Sulphide, crystals	ton	8	10	0	to	9	0	0
Sulphide, solid, 60–62 %	ton	14	10	0	to	15	10	0
Sulphite, cryst.	ton	11	10	0	to	12	0	0
Strontium carbonate	ton	50	0	0	to	55	0	0
Nitrate	ton	50	0	0	to	55	0	0
Sulphate, white	ton	6	10	0	to	7	10	0
Sulphur chloride	ton	25	0	0	to	27	10	0
Flowers	ton	11	0	0	to	11	10	0
Roll	ton	9	15	0	to	10	10	0
Tartar emetic	lb.	0	1	2	to	0	1	3
Tin perchloride, 33%	lb.	0	1	1	to	0	1	2
Perchloride, solid	lb.	0	1	3	to	0	1	4
Protochloride (tin crystals)	lb.	0	1	4	to	0	1	5
Zinc chloride 102° Tw.	ton	20	0	0	to	21	0	0
Chloride, solid, 96–98%	ton	25	0	0	to	30	0	0
Oxide, 99%	ton	42	0	0	to	45	0	0
Dust, 90%	ton	50	0	0	to	55	0	0
Sulphate	ton	15	0	0	to	16	0	0

Pharmaceutical Chemicals

Acetyl salicylic acid	lb.	0	3	3	to	0	3	6
Acetanilid	lb.	0	1	6	to	0	1	9
Acid, Gallic, pure	lb.	0	3	0	to	0	3	3
Lactic, 1.21	lb.	0	2	0	to	0	2	6
Salicylic, B.P.	lb.	0	2	1	to	0	2	3
Tannic, leviss	lb.	0	3	3	to	0	3	6
Amidol	lb.	0	7	9	to	0	8	3
Amidopyrin	lb.	0	13	0	to	0	13	3
Ammon ichthosulphonate	lb	0	1	10	to	0	2	0
Barbitone	lb.	1	1	0	to	1	3	0
Beta naphthol resublimed	lb.	0	1	9	to	0	2	0
Bromide of ammonia	lb.	0	0	7	to	0	0	7½
Potash	lb.	0	0	6½	to	0	0	7
Soda	lb.	0	0	7½	to	0	0	8
Caffeine, pure	lb.	0	10	9	to	0	11	0
Calcium glycerophosphate	lb.	0	5	9	to	0	6	0
Lactate	lb.	0	1	10	to	0	2	0
Calomel	lb.	0	4	9	to	0	5	0
Chloral hydrate	lb.	0	3	10½	to	0	4	0
Cocaine alkaloid	oz.	0	17	3	to	0	17	9
Hydrochloride	oz.	0	14	6	to	0	15	0
Corrosive sublimate	lb.	0	4	0	to	0	4	3
Eucalyptus oil, B.P. (70–75% eucalyptol)	lb.	0	1	10	to	0	1	11
B.P. (75–80% eucalyptol)	lb.	0	1	11	to	0	2	0
Guaiacol carbonate	lb.	0	8	9	to	0	9	0
Liquid	lb.	0	9	6	to	0	10	0
Pure crystals	lb.	0	9	6	to	0	9	9
Hexamine	lb.	0	3	10	to	0	4	0
Hydroquinone	lb.	0	3	6	to	0	3	9
Lanoline anhydrous	lb.	0	0	7	to	0	0	7½
Lecithin ex ovo	lb.	0	17	6	to	0	19	0
Lithi carbonate	lb.	0	9	6	to	0	10	0
Methyl salicylate	lb.	0	2	3	to	0	2	6
Metol	lb.	0	10	6	to	0	11	6
Milk sugar	cwt.	4	2	6	to	4	5	0
Paraldehyde	lb.	0	1	6	to	0	1	9
Phenacetin	lb.	0	6	4	to	0	6	6
Phenazone	lb.	0	7	3	to	0	7	6
Phenolphthalein	lb.	0	6	9	to	0	7	0
Potassium sulpho guaiacolate	lb.	0	5	0	to	0	5	3
Quinine sulphate, B.P.	oz.	0	2	3			—	

	Per	£	s.	d.		£	s.	d.
Resorcin, medicinal	lb.	0	5	6	to	0	5	9
Salicylate of soda powder	lb.	0	2	6	to	0	2	9
Crystals	lb.	0	2	9	to	0	3	0
Salol	lb.	0	2	9	to	0	3	0
Soda Benzoate	lb.	0	2	6	to	0	2	9
Sulphonal	lb.	0	14	6	to	0	15	0
Terpene hydrate	lb.	0	1	9	to	0	2	0
Theobromine, pure	lb.	0	10	6	to	0	11	0
Soda salicylate	lb.	0	7	9	to	0	8	0
Vanillin	lb.	1	3	0	to	1	4	0

Coal Tar Intermediates, &c.

Alphanaphthol, crude	lb.	0	2	0	to	0	2	3
Refined	lb.	0	2	6	to	0	2	9
Alphanaphthylamine	lb.	0	1	6	to	0	1	7
Aniline oil, drums extra	lb.	0	0	9	to	0	0	9½
Salts	lb.	0	0	9½	to	0	0	10
Anthracene, 40–50%	unit	0	0	8½	to	0	0	9
Benzaldehyde (free of chlorine)	lb.	0	2	6	to	0	2	9
Benzidine, base	lb.	0	4	9	to	0	5	0
Sulphate	lb.	0	3	9	to	0	4	0
Benzoic acid	lb.	0	2	0	to	0	2	3
Benzyl chloride, technical	lb.	0	2	0	to	0	2	3
Betanaphthol	lb.	0	1	1	to	0	1	2
Betanaphthylamine, technical	lb.	0	4	0	to	0	4	3
Crocein Acid, 100% basis	lb.	0	3	3	to	0	3	6
Dichlorbenzol	lb.	0	0	9	to	0	0	10
Diethylaniline	lb.	0	4	6	to	0	4	9
Dinitrobenzol	lb.	0	1	1	to	0	1	2
Dinitrochlorbenzol	lb.	0	0	11	to	0	1	0
Dinitronaphthalene	lb.	0	1	4	to	0	1	5
Dinitrotoluol	lb.	0	1	4	to	0	1	5
Dinitrophenol	lb.	0	1	6	to	0	1	7
Dimethylaniline	lb.	0	2	9	to	0	3	0
Diphenylamine	lb.	0	3	6	to	0	3	9
H-Acid	lb.	0	5	0	to	0	5	3
Metaphenylenediamine	lb.	0	4	0	to	0	4	3
Monochlorbenzol	lb.	0	0	10	to	0	1	0
Metanilic Acid	lb.	0	5	9	to	0	6	0
Metatoluylenediamine	lb.	0	4	0	to	0	4	3
Monosulphonic Acid (2.7)	lb.	0	8	6	to	0	9	6
Naphthionic acid, crude	lb.	0	2	3	to	0	2	6
Naphthionate of Soda	lb.	0	2	5	to	0	2	6
Naphthylamin-di-sulphonic-acid	lb.	0	4	0	to	0	4	3
Nevill- Winther Acid	lb.	0	7	3	to	0	7	9
Nitrobenzol	lb.	0	0	7	to	0	0	8
Nitronaphthalene	lb.	0	0	11½	to	0	1	0
Nitrotoluol	lb.	0	0	8	to	0	0	9
Orthoamidophenol base	lb.	0	12	0	to	0	12	6
Orthodichlorbenzol	lb.	0	1	0	to	0	1	1
Orthotoluidine	lb.	0	0	10	to	0	0	11
Orthonitrotoluol	lb.	0	0	3	to	0	0	4
Para-amidophenol, base	lb.	0	8	6	to	0	9	0
Hydrochlor	lb.	0	7	6	to	0	8	0
Paradichlorbenzol	lb.	0	0	6	to	0	0	7
Paranitraniline	lb.	0	2	7	to	0	2	9
Paranitrophenol	lb.	0	2	3	to	0	2	6
Paranitrotoluol	lb.	0	2	9	to	0	3	0
Paraphenylenediamine, distilled	lb.	0	12	0	to	0	12	6
Paratoluidine	lb.	0	5	6	to	0	5	9
Phthalic anhydride	lb.	0	2	6	to	0	2	9
Resorcin, technical	lb.	0	4	0	to	0	4	3
Sulphanilic acid, crude	lb.	0	0	10	to	0	0	11
Tolidine, base	lb.	0	7	3	to	0	7	9
Mixture	lb.	0	2	6	to	0	2	9

Essential Oils and Synthetics

Essential Oils.		£	s.	d.
Anise	c.i.f. 1/10 spot	0	2	0
Bay		0	12	0
Bergamot		0	12	0
Cajaput		0	3	9
Camphor, white	per cwt.	4	0	0
Brown	„	3	15	0
Cassia	c.i.f. 10/3 spot	0	12	0
Cedarwood		0	1	4½
Citronella (Ceylon)		0	3	6
(Java)		0	4	2
Clove		0	7	0
Eucalyptus	very firm	0	1	10
Geranium Bourbon		1	10	0
Lavender		0	12	6
Lavender spike		0	3	0
Lemon		0	3	0
Lemongrass	per oz.	0	0	2½
Lime (distilled)		0	4	0
Orange sweet (Sicilian)		0	13	6
(West Indian)		0	10	6
Palmarosa	dearer	1	0	0
Peppermint (American)		0	13	0
Mint (dementholised Japanese)		0	7	0
Patchouli		1	12	0
Otto of Rose	firmer, per oz.	1	4	0
Rosemary		0	1	8
Sandalwood		1	6	0
Sassafras		0	5	6
Thyme	2/6 to	0	8	0

Synthetics.				
Benzyl acetate		0	3	0
Benzoate		0	3	0
Citral		0	10	0
Coumarine		0	18	6
Heliotropine		0	7	6
Ionone		1	5	0
Linalyl acetate		1	2	6
Methyl salicylate		0	2	6
Musk xylol	dearer	0	10	9
Terpeniol		0	3	0

Visit to the Gas Light & Coke Co.'s Works

Reduction in the Price of Town's Gas

A VISIT was paid to the Beckton works of the Gas Light and Coke Co. by several Members of Parliament and representatives of municipal authorities on Tuesday. It was announced during the visit by Mr. D. Milne Watson, Governor of the company, that the charge for gas had been reduced from 9·2d. to 8·6d. per therm, the reduction being effective from June last. The new price corresponds to a figure of 3s. 7d. per thousand cubic feet.

The works are estimated to be the largest in this country, and a thorough examination was made of the plant for the manufacture of gas and of the so-called "waste" products from coal. The examination of the factories employed in the latter work was the most interesting part of the visit, and it came as a surprise to many of the visitors to learn that among the residual products resulting from the manufacture of gas each year at these works were 17 million gallons of tar and 55 million gallons of ammoniacal liquor. These are the main "side lines" at Beckton, but among the materials and chemicals manufactured there in sufficient quantities for commercial sale are, road tar, sulphuric acid, sulphate of ammonia, liquid and anhydrous ammonia, motor benzol, carbolic acids, creosote and oils, naphthalene, beta naphthol, salicylic acid, anthracene, pitch, Prussian blue, sodium cyanide and ferrocyanide. Much of the naphtha produced here is made into "moth-balls" that are familiar to housewives, and an enormous number of these is produced each year. The visitors were taken to see the plant for the manufacture of carburetted water gas, to the water filtration plant, to the workshops, which are the largest in the London district, and to the retort houses.

Magadi Soda Position

A CIRCULAR dealing with the position of the Magadi Soda Co., Ltd., has been issued by Mr. Pennell and his supporters (whose proposals for the appointment of a committee of shareholders were defeated at the later ordinary general meeting on June 18), in which it is stated that the provisional committee has now been considerably strengthened, and several large shareholders have intimated their intention of supporting it. Information has been obtained which was not available prior to the general meeting, and will be placed before the shareholders at a later date. In due course, the circular adds, the directors must submit their reconstruction proposals, and there are ample grounds for stating that they will be of a very drastic character, involving a heavy sacrifice and assessment on existing shareholders. Proxies will probably be solicited by the board to carry through the proposals, and the Pennell committee are anxious that before supporting any scheme of reconstruction, or giving proxies to Messrs. Samuel, shareholders should clearly understand that, with the exception of Mr. Simons, the whole of the original directors of the company, outside the Samuel firm, have left, and that Mr. Samuel Samuel is, to all intents and purposes, the second debenture holder. The circular concludes by stating that the committee agree with the proposal put forward at the meeting by Colonel Villiers that a committee should be formed on which debenture holders, shareholders and the Government should be represented, in order to decide upon the future policy of the company.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to* THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.

Glasgow, July 18, 1923.

WITH the intervention of the holidays, business has been practically at a standstill during the past week, and there is nothing of importance to record. Prices for home products are, on the whole, firm, with Continental quotations inclined to be a little higher.

Industrial Chemicals

ACID, ACETIC (GLACIAL).—98/100%, £60 to £69 per ton; 80% pure, £49 to £50 per ton; 80% technical, £45 to £47 per ton, c.i.f. U.K. ports, duty free.

ACID, BORACIC.—Crystal or granulated, £50 per ton; powdered, £52 per ton, carriage paid U.K. stations, minimum ton lots.

ACID, CITRIC.—Spot lots about 1s. 8d. per lb., but little demand

ACID, FORMIC, 80%.—Unchanged at £50 per ton, ex wharf, spot delivery.

ACID, HYDROCHLORIC.—Maker's price unchanged, 6s. 6d. per carboy, ex works.

ACID, NITRIC, 80°.—£24 per ton, ex station, full truck loads.

ACID, OXALIC.—Quoted 6d. to 6¼d. per lb., ex store.

ACID, SULPHURIC.—144°, £3 15s. per ton; 168°, £7 per ton, ex works, full truck loads. De-arsenicated quality, 20s. per ton extra.

ACID, TARTARIC.—Unchanged at 1s. 2¾d. per lb., less 5 per cent., ex store, spot delivery.

ALUM, LUMP POTASH.—Spot lots about £11 5s. per ton, ex store.

ALUM, CHROME.—Offered at £22 to £23 per ton, according to quality, f.o.b. U.K. ports.

ALUMINA, SULPHATE.—17/18%, £10 10s. per ton; 14/15%, £7 10s. per ton, ex wharf, early delivery.

AMMONIA, ANHYDROUS.—Now quoted 1s. 5d. per lb., ex station.

AMMONIA, CARBONATE.—Lump 4d. per lb; ground 4¼d. per lb., delivered.

AMMONIA, LIQUID, 880°.—About 3½d. per lb., ex station.

AMMONIA, MURIATE.—Grey galvanisers quality about £30 to £31 per ton; fine white crystals, £23 15s. per ton, ex wharf, early delivery.

AMMONIA, SULPHATE.—25¼%, £13 2s. per ton; 25¾% neutral quality, £14 5s. per ton, ex works, prompt delivery

ARSENIC, WHITE POWDERED.—Now quoted £75 10s. per ton, ex wharf, spot delivery.

BARIUM CHLORIDE, 98/100%.—Inclined to be higher at £13 5s. per ton, ex wharf, early delivery.

BARYTES.—Finest white English, £5 5s. per ton, ex works.

BLEACHING POWDER.—£11 7s. 6d. per ton, ex station, spot delivery. Contracts 20s. per ton less.

BORAX.—Granulated, £26 10s. per ton; crystal, £27 per ton; powdered, £28 per ton, carriage paid U.K. stations, minimum ton lots.

CALCIUM CHLORIDE.—English make unchanged at £5 12s. 6d. per ton, ex quay or station. Continental material about £4 per ton c.i.f. U.K.

COPPER SULPHATE.—Moderate export inquiry. Quoted, £26 10s. per ton, less 5 per cent., f.o.b. U.K. port.

COPPERAS, GREEN.—About £2 2s. 6d. per ton, f.o.b. U.K. port.

FORMALDEHYDE, 40 per cent.—Quoted, £92 10s. per ton ex wharf, spot delivery. About £87 per ton, ex wharf, early shipment from continent.

GLAUBER SALTS.—Fine white crystals quoted £3 15s. per ton, ex store.

LEAD, RED.—English makers reduce price to £40 per ton, carriage paid U.K. stations. Continental material about £36 10s. per ton, ex store.

LEAD ACETATE.—Spot material scarce. Offered from continent at £42 per ton, c.i.f. U.K. prompt shipment.

MAGNESITE, GROUND CALCINED.—English burnt material £8 5s. per ton, ex station. Finest continental about £7 5s. per ton, c.i.f. U.K. ports.

MAGNESIUM CHLORIDE.—Still quoted about 30s. per ton, c.i.f. U.K. spot lots about £2 10s. per ton, ex store.

MAGNESIUM SULPHATE.—(EPSOM SALTS).—Commercial quality £7 per ton. B.P. quality, £8 5s. per ton, ex station. Continental commercial crystals quoted £4 per ton, ex store.

POTASH CAUSTIC.—88/92%, about £30 10s. per ton, c.i.f. U.K. port. Spot lots, £32 10s. per ton, ex store.

POTTASSIUM BICHROMATE.—Unchanged at 5¾d. per lb., delivered.

POTASSIUM CARBONATE.—96/98% now quoted, £29 15s. per ton, c.i.f. U.K. 90/92%, about £27 per ton; spot lots, £32 10s. and £28 per ton, respectively, ex store.

POTASSIUM CHLORATE.—Unchanged at about 3d. per lb., ex store.

POTASSIUM NITRATE.—(SALTPETRE).—Nominally, £32 per ton, ex store.

POTASSIUM PERMANGANATE.—B.P. Crystals unchanged at about 10½d. per lb., ex store.

POTASSIUM PRUSSIATE (YELLOW).—Price about 1s. 3¾d. per lb. ex store.

SODA, CAUSTIC.—76/77%, £21 7s. 6d. per ton; 70/72%, £19 17s. 6d. per ton; 60/62%, broken, £21 2s. 6d. per ton; 98/99%, powdered, £24 15s. per ton—all ex station, spot delivery.

SODIUM ACETATE.—Inclined to be higher at £25 10s. per ton, ex wharf.

SODIUM BICARBONATE.—Refined recrystallised quality, £10 10s. per ton, ex quay or station. M.W. quality, 30s. per ton less.

SODIUM BICHROMATE.—Unchanged at 4½d. per lb. delivered.

SODIUM CARBONATE.—Soda crystals, £5 to £5 5s. per ton, ex quay or station. Alkali, 58%, £8 16s. per ton, ex quay or station.

SODIUM HYPOSULPHITE.—Commercial crystals offered from the continent at £7 17s. 6d. per ton, c.i.f., U.K.. Spot lots about £9 10s. per ton, ex store. Pea crystals quoted £15 10s. per ton, ex store.

SODIUM NITRATE.—Refined, 96/98%, about £13 7s. 6d. per ton, f.o.r. or f.o.b., U.K. port.

SODIUM NITRITE.—£27 to £29 per ton, basis 100%, according to quantity.

SODIUM PRUSSIATE (YELLOW).—Now quoted 7¼d. per lb., ex store.

SODIUM SULPHATE (SALTCAKE).—Unchanged at £4 per ton, ex station for home consumption. Higher prices for export.

SODIUM SULPHIDE.—60/62% continental material about £12 10s. per ton, c.i.f., U.K. British quoted £16 10s. per ton, ex station.

SULPHUR.—Flowers, £10 per ton; roll, £9 per ton; rock, £9 per ton; ground, £8 per ton. Prices nominal.

TIN CRYSTALS.—Unchanged at 1s. 4d. per lb.

ZINC CHLORIDE.—98/100% solid, now quoted £22 15s. per ton, c.i.f., U.K. ports.

ZINC SULPHATE.—Commercial crystals about £11 5s. per ton, ex store.

NOTE.—The above prices are for bulk business, and are not to be taken as applicable to small parcels.

Coal Tar Intermediates and Wood Distillation Products

ANILINE OIL.—Big home inquiry. Price 9d. per lb.

ANTHRA QUINONE.—Export inquiry. Price quoted 2s. 7d. per lb., f.o.b.

BENZALDEHYDE, 99½% PURE.—Export inquiry. Price 2s. 11d. per lb., f.o.b.

BENZIDINE BASE.—Large home demand. Price 5s. per lb. 100% basis, carriage paid.

BENZIDINE SULPHATE.—Small home inquiry. Price quoted 6s. 3d. per lb., 100% basis, carriage paid.

BENZOL.—90%, 1s. 7d., per gallon; pure, 2s. 2d. per gallon, ex works.

BETA NAPHTHOL.—This is in large demand, both for export and home trade. Price quoted 1s. 1d. per lb.

BETA NAPHTHOL R.—Small home inquiry. Price 1s. 4d. per lb., delivered.

CASSELLA F. ACID.—Export inquiry. Price 9s. 6d. per lb., 100% basis.

"H" ACID.—Home inquiry. Price quoted 5s. per lb., 100% basis.

MONONITRONAPHTHALENE (Refined Quality).—Large home inquiry. Price quoted 1s. per lb., delivered.

PARANITRANILINE;—Home inquiries. Price 2s. 7d. per lb., delivered.

Manchester Chemical Market

(From our own Correspondent.)

Manchester, July 19, 1923.

The chemical market here during the past week has been no more active than it has been for some little time. Home buyers on the whole are purchasing chiefly for immediate needs without showing any increased interest in forward positions. Export business is unchanged, Continental markets being very quiet, and the Dominions taking the lion's share of the shipments.

Heavy Chemicals

Caustic soda still meets with a comparatively active home and foreign demand, and prices keep very steady on the basis of £19 for 60 per cent., and £21 10s. per ton for 76–77 per cent. material. Bleaching powder is firm at £11 7s. 6d. per ton to home users, with a moderate amount of business being done. Sodium sulphide is in slightly better inquiry, principally for shipment, at £14 10s. to £15 per ton for 60–65 per cent. concentrated solid, and £8 10s. per ton for crystals. Glauber salts are steady at £4 per ton, but business is only on a restricted scale. Soda crystals are rather more active at £5 5s. per ton delivered. Saltcake continues in fair demand for shipment, but there is still only a moderate amount of inquiry from home consumers; prices are unchanged from last week at £4 10s. per ton. The demand for alkali is maintained, and current quotations are firm at £7 12s. 6d. per ton for 58 per cent. material. Bicarbonate of soda meets with a fairly active market at £10 10s. per ton delivered to home users. Hyposulphite of soda is steady at £14 per ton for photographic crystals, and £10 per ton for commercial, but the demand is very quiet. Nitrite of soda is steady, and in fair inquiry at £26 10s. per ton, but supplies continue short for early delivery. Phosphate of soda shows little improvement, though prices have been maintained at last week's range of £14 10s. to £15 per ton. Chlorate of soda is firm and moderately active at 2¾d. per lb. The demand for prussiate of soda is still on a subdued scale, and prices, though weak, are unchanged at 6¾d. per lb. Bichromate of soda is in fair request at 4½d. per lb. There is a scarcity of spot parcels of acetate of soda, and quotations are fully maintained at round £25 per ton.

Caustic potash is steady and in moderate inquiry at £29 to £30 per ton for 88–90 per cent. material. Carbonate of potash meets with a quietly steady demand at £31 per ton for 96–98 per cent. and £28 for 90–92 per cent. Bichromate of potash is without change in position or value at 5¾d. per lb. Yellow prussiate of potash is steady at the moment, but no improvement in demand can be reported; prices are round 1s. 3d. per lb. Permanganate of potash is rather quiet, but firm, at 9¾d. per lb. Chlorate of potash is steady at 3d. per lb., holders meeting with a moderately active demand.

Sulphate of copper is maintained at the recent level of £26 to £26 10s. per ton, though both home and export demand is said to be on a restricted scale. Although the inquiry for arsenic has fallen off somewhat, the comparative scarcity is sufficient to keep up prices, which are still round £74 per ton for white powdered, Cornish makes. Commercial Epsom salts are unchanged at £4 to £4 10s. per ton, with magnesium sulphate, B.P., steady at about £6. Prompt parcels of acetate of lime are rather scarce, and prices are firm at £21 to £22 per ton for grey, and £11 10s. per ton for brown. Nitrate of lead is well maintained at £42 to £43 per ton, and the same may be said of sugar of lead, both white and brown being quoted at about £42 per ton.

Acids and Tar Products

Tartaric and citric acids are only moderately active, though prices are steady; the current quotation for tartaric is 1s. 3¾d. per lb., and for citric 1s. 8d. to 1s. 8¾d. per lb. Acetic acid is very firm at about £70 per ton for glacial, and £47 to £48 per ton for 80 per cent. technical. Oxalic acid shows little sign of improved demand, though price is unchanged at about 6d. per lb.

Exporters are still actively inquiring for supplies of pitch for next season's shipment, and the position is therefore strong, prices being very firm at £6 10s. to £7 per ton, f.o.b. Carbolic acid is dull and weaker at 1s. 2d. per lb. for crystals and about 3s. per gallon for crude. Benzol is a quiet section of the market at 1s. 7d. to 1s. 8d. per gallon. Naphthalenes are still rather quiet, and prices are a shade easier at round £20 per ton for flake, and £7 to £13 for crude. Creosote oil is being called for only in small quantities at about 9d. per gallon. Solvent naphtha is quiet but steady at 1s. 5½d. to 1s. 6d. per gallon.

Chemical Trade Returns for June

The value of chemicals, dyes, drugs and colours imported during June, 1923, was £933,234, an increase of £54,745 over June, 1922, and a decrease of £185,344 on May, 1923. The figures for export similarly show a decrease on the previous month and an increase over the corresponding month last year, the figures being £2,385,072 for June, 1923, an increase of £599,961 compared with June, 1922, and a decrease of £186,883 on the May figures for 1923.

Imports for June

Increases.		1923.	1922.
Acid, acetic	tons	987	567
Bleaching materials	cwts.	4,981	4,171
Calcium carbide	cwts.	28,355	17,263
Distilled glycerin	cwts.	302	86
Red lead and orange lead	cwts.	3,155	4,220
Nickel oxide	cwts.	3,614	—
Sodium compounds, except nitrate	cwts.	16,626	10,745
Zinc oxide	tons	811	500
Unspecified coal tar dyes	cwts.	3,138	1,956
Barytes (including blanc fixe)	cwts.	52,148	44,566
Unspecified painters' colours	cwts.	81,322	59,991
Mercury	lbs.	150,899	63,428

Decreases.		1923.	1922.
Acid, tartaric, including tartrates	cwts.	4,616	5,432
Borax	cwts.	2,610	3,005
Crude glycerin	cwts.	60	3,406
Potassium nitrate	cwts.	1,049	13,095
Potassium compounds, except nitrate	cwts.	125,202	157,689
Sodium nitrate	cwts.	20,294	20,740
Cream of tartar	cwts.	2,064	3,447
Alizarine dyes	cwts.	63	175
Natural indigo	cwts.	12	45
White lead	cwts.	7,427	9,845
Essential oils, except turpentine	lbs.	242,977	261,234
Turpentine	cwts.	35,346	45,220

Exports for June

Increases.			
Acid, sulphuric	cwts.	2,779	1,531
Acid, tartaric, including tartrates	cwts.	1,086	195
Ammonium sulphate	tons	24,065	11,503
Benzol and toluol	gals.	247,393	4,544
Naphtha	gals.	39,020	6,011
Caustic soda	cwts.	117,380	136,307
Zinc oxide	tons	258	509
Naphthalene	cwts.	19,303	1,480
Tar oil, creosote, etc.	gals.	8,577,741	3,896,646
Unspecified coal tar products	cwts.	41,933	15,102
Glycerin, crude	cwts.	4,580	1,546
Glycerin, distilled	cwts.	5,815	2,949
Potassium nitrate	cwts.	1,098	851
Other potassium compounds, except chromate and bichromate	cwts.	3,459	1,815
Sodium carbonate, etc.	cwts.	564,615	368,948
Sodium chromate and bichromate	cwts.	4,171	4,107
Sodium sulphate, including saltcake	cwts.	151,884	142,420
Coal tar dyes	cwts.	9,191	4,000
Other synthetic dyes	cwts.	4,673	3,761
Barytes, including blanc fixe	cwts.	20,023	7,573
White lead	cwts.	18,775	18,724
Paints, etc., ground in oil or water	cwts.	29,099	20,389
Paints and enamels ready mixed	cwts.	29,754	14,878
Painters' colours, etc., unspecified	cwts.	59,073	43,041

Decreases.			
Ammonium chloride	tons	337	347
Bleaching powder	cwts.	12,443	25,581
Carbolic acid	cwts.	8,123	10,917
Copper sulphate	tons	3,282	4,682
Unspecified sodium compounds	cwts.	47,103	50,920
Potassium chromate and bichromate	cwts.	2,451	2,500

Chemical Manufacturer's Failure

A sitting for the public examination of William W. Coe, junr., chemical manufacturer, 24–26, Holborn, London, who was adjudged bankrupt on May 11, was fixed for the London Bankruptcy Court on Wednesday, July 11, before Mr. Registrar Hope. No statement of the debtor's affairs was filed: he did not appear, and the Official Receiver stated he believed that the debtor had gone to New York. He had failed to attend under the bankruptcy proceedings. On the application of the Official Receiver, the examination was adjourned.

Company News

GAS LIGHT AND COKE CO.—The directors announce an interim dividend on the ordinary shares at the rate of £5 4s. per cent. per annum.

THE INTERNATIONAL NICKEL CO.—A quarterly dividend of 1½ per cent. on the preferred stock is announced, payable on August 1.

COURTAULDS, LTD.—The directors announce an interim dividend of 1s. 3d. per share, free of income-tax, payable on August 2. A similar distribution was paid in August last year.

THE "SHELL" TRANSPORT AND TRADING CO., LTD.—The 7 per cent. second preference share transfer books are closed until August 1, for the preparation of the half-yearly dividend warrants payable on that date.

COMMERCIAL GAS CO.—A dividend is announced for the half-year to June 30, 1923, at the rate of £6 per cent. per annum, less tax, on both the 4 per cent. capital stock and 3½ per cent. capital stock, payable on August 15.

AMERICAN CELLULOSE AND CHEMICAL MANUFACTURING CO.—The American Cellulose and Chemical Manufacturing Co., which holds the Cellulose Co.'s American rights, is making issues in the United States of 40,000 7 per cent. cumulative participating first preferred shares of $100 and 16,000 common shares of no par value. For every five preferred shares applied for subscribers will have the right to apply for two common shares at a price for the "mixture" of $502.

MAGADI SODA CO., LTD.—The directors announce that arrangements for a reconstruction scheme of the company are now well advanced, but are subject to certain assents which, it is feared, cannot be obtained before the long vacation. It is hoped to have everything in order when the courts reassemble in October, and the necessary meetings of shareholders will be called at the earliest possible moment. The reconstruction scheme cannot be circulated pending the completion of certain negotiations with the Government.

ELECTROLYTIC ZINC CO. OF AUSTRALASIA.—The directors have declared a dividend of 8 per cent. per annum for the six months ended June 30, 1923, as follows:—On issue (made in 1920) of 1,100,000 8 per cent. cumulative participating preference shares; on the amounts paid up from the respective dates of payment on the 8 per cent. cumulative participating preference shares allotted (under option certificate rights) prior to June 30, 1923; on the issued ordinary shares (this does not apply to deferred ordinary shares, which do not participate in dividends before July 31, 1925). The dividend is due and payable on September 5 to shareholders registered on August 9. The transfer books will close at 5 p.m. on August 8 and reopen at 10 a.m. on August 10. Dividend warrants, less tax, will be posted to shareholders on the London register direct from the London office.

RHODESIA BROKEN HILL DEVELOPMENT CO.—The report for 1922 states that since December 31, 1921, the capital has been increased to £1,000,000 in 4,000,000 shares of 5s. each, the total number issued being 2,242,461. Of the 1,757,539 unissued 470,615 are under option to December 31, 1923, at 5s. 6d. per share and 470,615 are under option to June 30, 1924, at 6s. per share. The grade of ore sent to smelters was well maintained for the major portion of the year, and during the twelve months 47,461 tons were smelted, producing 20,501 tons of lead. The profit, after writing off £35,170 for depreciation on machinery, etc., amounts to £76,982, and £99,850 was brought in. After deducting the dividend paid on August 1, 1922, and directors' percentage of dividend, there remains a total to credit of £139,732. The directors recommend a dividend of 10 per cent., less tax, on shares numbered 1 to 1,400,000, leaving, subject to corporation profits tax and directors' percentage of dividend, a balance of £104,732. Meeting, Cannon Street Hotel, London, E.C., July 28, at noon.

Tariff Change

UNION OF SOUTH AFRICA.—Cement and super-phosphates carried from European to Union ports under 17s. 6d. a ton of 2,240 lb. for super-phosphates and of 2,000 for cement (gross weight) will be liable to a dumping freight duty equivalent to the difference between 17s. 6d., and the freight charged. The duty will become immediately effective.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

LOCALITY OF FIRM OR AGENT.	MATERIAL.	REF. NO.
Norway	Boiled linseed oil.	70
New Zealand ..	Druggists' sundries.	64
San Francisco ..	Coal tar products, lithopone, zinc oxide, barium carbonate and barium sulphate, china clay.	84
San Francisco ..	Shellac and varnish gums.	86

Contracts Open

Tenders are invited for the following articles. The latest dates for receiving tenders are, when available, given in parentheses:

EDINBURGH (July 24).—Oxide of Iron. Particulars from Mr. H. H. Gracie, 15, Carlton Hill, Edinburgh.

MANCHESTER (July 25).—Mineral, heavy mineral, burning and paraffin oils. Particulars from Mr. R. Williamson, Town Hall, Manchester.

MONTEVIDEO (August 22).—Various lubricating oils. A copy of the specification, general conditions of tender, etc., can be seen at the Department of Overseas Trade (Room 52), 35, Old Queen Street, London, S.W.1. Reference No. 8280/F.L./C.C./2.

Welsbach Light Company

AT the ordinary general meeting of the Welsbach Light Co., Ltd., held on Friday, July 13, at Winchester House, London, Lord Weardale, the chairman, in moving the adoption of the report and accounts, said that the company's business might be classed under two categories—first, incandescent mantles, which formed their primary interest, and, secondly, goods other than mantles, which might be termed "sundries." Despite foreign and other competition, they sold more mantles last year than in the previous year, and considerably more sundries. In both cases they sold at lower prices, and, while in the case of mantles their aggregate receipts in pounds sterling were below those of the previous year, in the case of sundries, notwithstanding the lower prices, they were in excess of those of the preceding year. The percentage of sundries to their total trade was advancing, so that the broadening of the business was making progress. With regard to competition from abroad, the imports of mantles for the financial year to March 31, 1923, were considerably up as compared with those of the previous year, being £276,976 as against £211,838. The company's advertising campaign had been one of the most extensive character of any in its history, and he thought it would be agreed that the lighthouse poster brought out last year, and the various lighthouse models and other variations of the main idea, constituted one of the most effective and pleasing pieces of propaganda for a lighting business that had yet appeared. The range of their burners had been considerably increased, partly in the development of aluminium burners, but especially in super-heater and economy burners, and in other ways. Last year's mild winter must be regarded as a very unfavourable one from the point of view of radiator sales. Notwithstanding this, their business in these articles was well maintained, not only as regarded the well-known Welsbach Kern radiator, but also the smaller and very efficient radiator called the "Handiheater," which had had great success.

Chemical Companies Registered

ACCORDING to a list issued by Jordan and Sons, Ltd., Company Registration Agents, Chancery Lane, London, the total number of chemical companies registered during the six months January to June, 1923, was 180, with a total capitalisation of £1,464,000. Of these, six were public companies, the remaining 174 being private concerns.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

County Court Judgments

[*NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.*]

BLUNT, W. H. AND SON, 70, Snow Hill, Birmingham, wholesale druggists. (C.C., 21/7/23.) £13 3s. 8d., June 4, and £14 19s. 6d., June 12.

HARE, Horace and LONSDALE, Harold (late trading as HARE AND LONSDALE), 21, Grove Hall Drive, Beeston, Leeds, chemical agents. (C.C., 21/7/23.) £13 2s. 5d. June 7.

SANDAY, Marcus Beresford, 1, St. Thomas Street, Ryde (I. o. W.), perfumery maker. (C.C., 21/7/23.) £42 8s. 8d. June 6.

SHEPPERBY'S MANUFACTURING CHEMIST, LTD., 43, Chancery Lane, W.C., wholesale druggist. (C.C., 21/7/23.) £22 14s. 11d. May 10.

Receivership

GRAHAM AND COPE, LTD. (R., 21/7/23.)—H. Brooke, of Market Place, Dewsbury, was appointed Receiver on December 27, 1922, under powers contained in instrument dated September 8, 1921.

Bill of Sale

BLUNT, Henry Rowland, 47, Finnimore Road, Little Bromwich, trading as W. H. BLUNT AND SON, 70, Snow Hill, Birmingham, wholesale druggist. (B.S., 21/7/23.) £400. July 13.

Mortgages and Charges

[*NOTE.—The Companies Consolidation Act, of 1908, provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.*]

BRITISH CELLULOSE AND CHEMICAL MANUFACTURING CO., LTD. (late BRITISH CELLULOSE AND AND CHEMICAL MANUFACTURING (PARENT) CO., LTD.), London, S.W. (M., 21/7/23.) Registered July 6. Trust Deed dated June 28, 1923 (supplemental to Trust Deed dated August 4, 1922), securing £1,000,000 (including £500,000 secured by original deed and £200,000 re-issued by this deed) and redemption premium of £100,000; charged on properties mentioned in third and fourth schedules of original deed (except first part to third schedule), also general charge. *£452,500. May 15, 1922.

CROSS BONE MANURE AND LIME CO., LTD., Bridlington. (M., 21/7/23.) Registered July 4, charge to bank; charged on Electric Bone Mills, Pinfold Lane, Bridlington, and land abutting on Canal Wharf, Driffield.

DAVIS AND SON, DYERS, LONDON, LTD., London, W. (M., 21/7/23.) Registered July 4, mortgage and a Land Registry charge, securing £6,000, to Col. W. N. Dakis, Salt Hill, Slough; charged on 5 to 37 (odd), South Row, Kensal Town. *£14,000. February 13, 1923.

DEVON AND CORNWALL PAINT CO., LTD., Poole. (M., 21/7/23.) Registered July 3, two charges to bank; charged on Sea King Works, West Quay Road and Devocorn Works, High Street, Poole.

FLINN AND SON, LTD., Fishergate, dyers. (M., 21/7/23.) Registered July 4. £1,400 mortgage to Sir B. S. Johnson, Abbots Lea, Woolton, Liverpool; charged on 18, Queen's Road, Hastings. *£6,000. April 4, 1923.

VICLEY AND CO., LTD., Long Eaton, dyers and finishers. (M., 21/7/23.) Registered July 3. £2,000 debentures to E. Hooley, Cleve Lodge, Long Eaton, hosiery manufacturer; general charge.

WATERHOUSE (J.) AND CO., LTD., Ashton-under-Lyne, druggists. (M., 21/7/23.) Registered July 6. Deed of Novation (in substitution for mortgage previously given to bank) to bank; charged on premises in Church Street, Ashton-under-Lyne. *Nil. September 26, 1922.

Satisfaction

RANDALL AND WILSON, LTD. (late RANDALL AND SON, LTD.), Southampton, druggists. (M.S., 21/7/23.) Satisfaction registered July 9. £4,500, registered August 22, 1921.

London Gazette

Company Winding Up Voluntarily

CARDIFF ALKALI CO., LTD. (C.W.U.V., 21/7/23.) G. A. Knowles appointed Liquidator.

Receiving Order Rescinded

HUNTER, Archibald Duncan, 28, Vereker Road, West Kensington, London, analytical chemist. (R.O.R., 21/7/23.) Receiving Order, dated March 28, 1923, rescinded. June 27, 1923, all debts having been paid in full.

Edinburgh Gazette

CALEDONIAN CHEMICAL COMPANY (Robert CAMERON, Andrew Sneddon MATCHET), 219, Caledonia Road, Glasgow. (E.G., 21/7/23.) Application for summary sequestration presented at the instance of J. Stirling Duke, 39, Hope Street, Glasgow.

New Companies Registered

BOWATER PAPER MILLS, LTD., 159, Queen Victoria Street, London, E.C.4. Manufacturers of paper and pulp of all kinds. Nominal capital, £1,000 in £1 shares.

DE VAIN'S PROCESS, LTD. Manufacturers of and dealers in paper, wood pulp, etc., dealers in waste materials for making paper and pulp of all kinds. Nominal capital, £5,000 in £1 shares (4,500 "A" and 500 "B"). Solicitors: J. D. Langton and Passmore, 57, Old Broad Street, London.

GIFFEN CHEMICAL CO., LTD. Manufacturing chemists. Nominal capital, £3,000 in £1 shares. A subscriber: K. McIntosh, 23, St. Ronan's Drive, Shawlands, Glasgow.

LIQUID OXYGEN EXPLOSIVES, LTD., 1, Albemarle Mansions, Albemarle Street, London. To acquire any invention relating to the construction, manufacture, manipulation and operation of blasting, explosive, detonating or incendiary cartridges, fuses and bombs composed of or combined with liquid and gaseous oxygen, or any other chemical constituents, etc. Nominal capital, £31,500 in 30,000 ordinary shares of £1 and 30,000 founders' shares of 1s. each.

NORTHFLEET ESPARTO PLANT, LTD. Manufacturers of and dealers in paper, wood and other pulp, and articles made of or from paper, cellulose, etc.; manufacturers of and dealers in chemicals and oils, etc. Nominal capital, £40,000 in £1 shares. Solicitors: J. D. Langton and Passmore, 57, Old Broad Street, London.

ORIENT CO., LTD., Orient House, 21, Budge Row, London, E.C.4. Manufacturers of vegetable products, oil extractors; manufacturers and factors of and dealers in oil; vegetable, animal or mineral fatty acids, glycerin, soap, candles, etc. Nominal capital, £52,575 in 6s. shares.

VIDEX CO., LTD., 22, Huntsworth Mews, Upper Baker Street, London, N.W.1. Manufacturers of agricultural implements; chemical and general engineers, etc. Nominal capital, £500 in 5s. shares.